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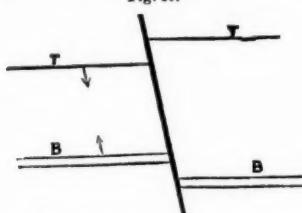
## Royal School of Mines.

## PROF. SMYTH'S LECTURES ON MINING—No. IX.

[BY OUR SPECIAL REPORTER.]

In a district where you have the lode heaved by a large number of cross-courses, more or less parallel in direction, you may conclude that similar phenomena will attend each case, and so when you have once established the direction in which the heave occurs you may expect to find that repeated, and indeed it would be strange if this were not the case. In this manner you might establish a rule for that district and those particular circumstances, or you might, on the other hand, work out the relations of each case by the method of Schmidt, explained in the last lecture. We need only look at the tabulated statements by Mr. Henwood to see that the relations of right hand and left hand, of smaller angle and greater angle, cannot be adhered to invariably, and that they are applicable only to a particular mine or particular district, where the circumstances are of a similar character. The miners sometimes complicate this matter unnecessarily, by refusing to see any law, or to recognise that one portion of the ground has slipped over the other, and that as a general rule the portion on the hanging side has slipped downwards. When the heave due to the cross-course is accompanied by a considerable lateral movement you may have the curious case of two lodes dipping in opposite directions heaved in the same direction by the cross-course. The evidence as to the occurrence of such lateral movements in the more or less horizontal strata of the slickensides is very satisfactory. It is sometimes regarded with great wonder that a small portion of a lode which has been dislocated by a cross vein should be found on the opposite wall of the latter, facing the main lode, although the broken part has been moved further down. In such cases we must remember that the ground has frequently been opened several times in the same place, the evidence of which we have previously considered; and that it would seem that after the dislocation had occurred a subsequent re-opening gave rise to this portion, which appears to belong to the original lode. To illustrate the influence of dip on the direction of heaves we may take the following case from the 250 fm. level of the Fowey Consols Mine, shown on plan in Fig. 10. The two

Fig. 10.



lodes, T and B, which dip in opposite directions, as shown by the arrows, are moved in opposite directions by the same dislocator, and this is entirely due to the difference in their dip, as may clearly be seen by working it out according to the method of Schmidt. And it will also be seen that in this instance a fixed rule as to turning to right hand or left hand would not hold good for both cases. One of the most interesting cases occurred in the Great Devon Consols Mine, where a large cross-course dislocated the lodes upwards of 80 fms., so much so that fresh shafts had to be sunk, and two portions worked quite separately.

We pass now from these lodes to a series of deposits of ore which put on in some districts many appearances of lodes, but which require to be treated in quite another category. We may meet at the surface of the ground an appearance like that of a lode, but yet we should not be justified in entering upon any extensive workings on the assumption of this—which is, in fact, an irregular repository—being propagated downwards, or horizontally, in the manner of a regular lode. These irregular repositories are what the French commonly call *amas*, and the Germans *Stöcke* (singular *Stock*). We may consistently divide these into four classes—1. Those which follow the plane of contact of two different rocks, perhaps for a considerable portion of that plane.—2. Those embedded in, or closely united with, igneous or non-stratified rocks.—3. Those associated with stratified rocks, or with rocks which are more or less metamorphic.—4. Those occurring in limestones. This is a division having more of a geognostic than of a geological character, for in the fourth class, for example, the characters we have to consider are common to the whole class of limestones, independent of their relative age. They are frequently noticeable at once as different from lodes in the materials they contain; from a want of regular arrangement in the minerals; for an absence of spaces lined with crystallised minerals, which are seldom found in this class of deposits, their general character being that they contain a large amount of material in a densely aggregated form, frequently crystalline, but usually consisting of very small crystals—e.g. the magnetite of Sweden. They are remarkably free from mixture with other minerals, except those actually embedded in them, as crystals of garnet.

Of irregular deposits at contact we have no remarkable examples in this country, but they may be seen in the continental deposits of iron ore, as in the Harz. Some of the lodes in those districts would appear to present much the same character, but may be distinguished usually by being carried out more regularly and to a greater distance. These occur at the junction of certain porphyries and of clay-slates: appearances of this kind have been also met with in the Harz, near Altenau and Clausthal, and again in the south-east part of Hungary. In this latter district a series of repositories extend over a district of from 30 to 40 miles, and may, I believe, be traced further on to the mountains of Servia: they occur where a series of secondary rocks are brought into contact with a great band of syenite, which courses through the country in a nearly north and south direction.

Among the irregular repositories in non-stratified rocks we have the *Stockwerke* of the Germans, a number of which occur in North Bohemia and Saxony. Some of these have been worked for tin from a very early period, never producing such great quantities of materials, however, as in our own tin mines. The usual feature is that in a granitic rock, flanked by gneiss or mica schist, a vast number of small veins occur, rendering it advisable to remove large quantities of the rock itself: in doing this it is exceedingly difficult, from the nature of the workings, the nature of the ground, and the oxidation of the rock, to work it with safety. It is said to derive its name from the fact that the workings are in successive levels or stocks. In other districts gold instead of tin may be the mineral disseminated. In Cornwall, near St. Austell, we have a great open working, which has been called a stockwork, but it is not really such, partly because the strings generally run pretty much in the same direction, very much like little veins, and partly because the working of china-clay has led to it forming a great open work. There are one or two other kinds of repositories, of which I can give you nothing but very general statements as to their irregularity, such as the "tin floors" which occur in some parts of Cornwall, at no great distance from or adjoining the lodes. I must refer you to the earlier volumes of the "Transactions of the Royal Geological Society of Cornwall" for very full information about them; at present I do not know that there are any in work. In West Cornwall in the neighbourhood of St. Ives, are some irregular deposits, which have received from the miners the local name of "carbonas," and of which I may say no satisfactory explanation has yet been given. They are generally met with not far from the lodes, but pass off from the latter, the communication between them being, perhaps, only a small film of quartz. They pass off into a kind of pipe, which, generally speaking, has been filled with material, at first sight like coarse granite, but containing tin throughout. Generally there is a difference noticeable between this material and that of the lode, although there is a close analogy between them: schorl generally forms a prominent constituent of these carbonas. One of

the most remarkable instances occurred at the East Wheal Lovell, where a succession of these irregular repositories, extending much in the direction of the lode, yielded a considerable quantity of ore. It should be observed that sometimes one of these carbonas lies entirely between two levels, being limited above and below. One of the most remarkable in Europe is the Monte Catini Mine, in Tuscany, between Florence and Leghorn, which resulted from the following down of a small tongue of copper ore seen at the surface, and which tongue opened out into a wonderful mass belonging to this class of repositories. The ore is copper glance and bornite, exceedingly free from admixture, and although it is but a small mine it has proved one of the richest in Europe. The adjoining rock is a variety of soft serpentine, termed by the Italians *gabbroso*, in many parts exhibiting a brecciated character; it is so suffused with pyrites that in exposed parts where there is not a strong current of air the temperature is exceedingly high. This is the result, I believe, of the oxidation of the pyrites, and is one of the disadvantages connected with the mine.

We come next to the irregular deposits in stratified rocks, and may take as an example the great mine of Rammelsberg, in the Harz, as being the most ancient mine, which has worked continuously from before 1000 A.D., so it is said. The deposit was first met with in the side of a clay slate hill, and was found to enlarge downwards, and then to bifurcate. At its widest part it was 350 feet across, and extended about half-a-mile in length. The whole of the deposit is one dense mass of minerals, among which the most notable are different varieties of quartz, and pyrites. No less than 15 different metals have been met with, and a considerable number of them, from gold down to zinc and iron, have been more or less utilised. The great difficulty in these large workings is to support the walls, and in this case the working has been by the method of fire-setting. In this class also come the great deposits of iron pyrites in the south-west of Spain, at F'relon near Seville, and in the adjoining part of Portugal, occurring in the midst of clay slate rocks. The district was worked long ago by the Romans for copper ores, which were found in irregular lenticular masses. The present working of pyrites are on so gigantic a scale that it has been found advisable to remove the top, and work the deposit as a large quarry. One of these is capable of supplying ore sufficient to load 400 to 500 ships in a year. The ore is shipped off to Liverpool and other ports for the manufacture of sulphuric acid, &c. The surface action has changed the pyrites from the surface down to a certain depth into the oxide of iron—in fact, into gossan.

The fourth and last class of these irregular repositories comprises those which occur in limestone: the circumstances of these are so varied that they demand a whole course of lectures to treat them fully. A deposit of lead ore of this kind in Flintshire—Fawngog Mines—was first taken to be a regular east and west lode, and a series of shafts was sunk as usual, but the lode was not found. When the deposit was found again, lying between limestone and sandstone, it was taken for a bed, but in fact it was neither lode nor bed, it was really a series of irregular masses. These proved to be very rich, yielding massive pieces of pure galena and cerusite. Evidently the deposit had been introduced subsequently to the formation of both limestone and sandstone, inasmuch as it penetrated into and occupied the joints in each. The "flats" of the North of England district of Alston Moor belong also to this class, where from the sides of the lodes you have masses extending into the limestone wall; generally three of these have been observable and followed for few feet, or for several yards, into the rock. As these have been in many cases very productive, a lode which flats off into the limestone is regarded as favourable. In Yorkshire what are called "flats" are somewhat similar, as in the district of Swaledale. The regular veins here running north and south have been extremely poor, although of large size, and containing much vein stuff; the men have driven out into the cross-cuts, and between the cross-cuts and the veins they have met with in these flats following joints in the limestone, and running nearly in the same direction as the veins. In some cases these flats found are of large size, and have evidently been washed out, or worn out by the action of water; when opened they are more or less filled up with matters fallen from the roof, &c., among which large masses of pure galena are very commonly found in enormous quantities. The "pipe veins" of Derbyshire are of an essentially similar character. Another series of this class of deposits which must be mentioned are the great deposits of hematite in the Whitehaven and Ulverstone districts.

They, too, are great washed out portions of limestone. I can regard them as nothing more; they have much the appearance of lodes, but come to a sudden termination below, especially when they meet a bed of shale. From the nature of these deposits we may expect to find more or less impurity intermixed with the ore, but in some cases they are remarkably pure. As they are covered over with 20 or 40 ft. thickness of boulder clay, which renders it a difficult matter to find any indications of them at the surface, it is found necessary to employ borers to go about testing the ground for them. The last series I may mention is that of deposits of iron ore—brown hematite—on the south border of the South Wales coal field, and notably also in the Forest of Dean. The deposits occur in irregular excavations, in rocks of dolomitic limestone, which are termed churms; the churms may sometimes contain sand or clay, sometimes brown iron ore. The average height of the churms is from 10 to 20 ft. Examples of this fourth class of irregular repositories are met with in Belgium, Westphalia, and the North of Spain, yielding ores of iron, zinc, and sometimes lead. Burat, in his work, gives sections of some of them, and much information respecting them may be found in the "Transactions of the Geological Society of Germany." They are exceedingly interesting, as defying all attempts to reduce them to anything like rule.

## COLLIERY ACCIDENTS, AND THEIR PREVENTION.

The London Association of Foremen Engineers and Draughtsmen held their annual meeting on Saturday at the Society of Arts, the President, Mr. JOSEPH NEWTON, C.E., being in the chair. There was a good attendance of members and friends. After some preliminary business, the President delivered his annual address. In the course of his observations special reference was made to the colliery fatalities of the past year; and suggestions were thrown out for their prevention and the alleviation of the distress consequent upon them. He said that the mining fatalities of 1875, it was to be feared, would prove upon the day of reckoning to have been far more numerous than those of any previous year in the annals of this country. Very much of the apathy felt and the indifference exhibited by the general body of the community in respect to colliery disasters had arisen not from callousness, but from lack of technical information. If the memory of the recent disasters were allowed to die without strenuous and determined efforts being made to prevent a recurrence of them, the sin, and perhaps the remorse, would certainly remain with those who had the power to do good had failed to use it, and who shut their eyes to the teachings of experience. In a few months Parliament would re-assemble, and should the Government fail to take up earnestly the subject of death in coal mines, it was to be hoped that some philanthropic, practical, and energetic member would do for the collier what Mr. Plimsoll had done, and was doing for "Poor Jack"—make it as criminal an offence to send the one into the workings of an ill-ventilated and ill-found coal pit as it was to ship the other on board a rotten and untrustworthy vessel. It was likely that in the course of the next twelve months the "out-put" of 4000 collieries of the British Isles would be fully equal to what it was in 1874 (the statistics of 1875 were not yet published), 125,000,000 tons; and as matters stand at present it was highly probable that 13 human lives would be sacrificed every month of the year in accomplishing the task. Surely such a statement, based upon reliable data, ought to have the effect of concentrating the attention of the Ministers of State upon the whole question, and of inducing them to put a barrier between the 1200 doomed colliers and their otherwise inevitable destiny. Mr. Newton said that, in fact, it had been long thought next in importance to the saving of life in the coal pits should rank the care to be taken of the widows and orphans of coal pit victims. The causes of accidents might be debatable, and so might

be the means of the preservation of the victims, but there could be no doubt as to the sufferings—mental and physical—of those who had lost husbands, fathers, sons, or brothers by such catastrophes. It was in the work of enriching the country (the actual value of the coal raised from the pits of Great Britain in 1874 being 45,849,124!) and in ministering to the comforts of its inhabitants that their deceased relatives met their deaths. Could there be a shadow of doubt (as asked) as to whether the helpless tenants of homes thus made destitute were fit recipients of national compensation? The only difficulty consisted in the plan by which the useful work could be accomplished. A special system of compulsory life assurance for colliers had been some time ago suggested, and Parliament had already determined that a class exposed to such excessive and peculiar dangers as colliers should be protected by special laws, and thus the principle of partial, rather than universal, legislation had been instituted. Although a system of life assurance would undoubtedly be very beneficial to the men employed in collieries, to their families, to the public, and, perhaps, to coalowners themselves, the expediency of enforcing it by law might be doubted. It had been suggested that coalowners should in all cases of accidents be made to compensate the sufferers; but that would scarcely be a just arrangement. The colliers themselves were reckless for the most part, and nearly all of them were fatalists. Imbued with the sentiment, springing from the constant thought of danger, and in the habit of asserting that they could only die once, they frequently disregarded even the most obvious means of insuring their own safety. Nothing short of better education and higher intelligence would overcome the evil; but it was one which relieved to some extent coalowners from responsibility in respect of many accidents. Considering that the annual British out-put of coal was over 100,000,000 tons, if it were possible to levy upon it 1d. per ton from consumers, it was easy to see that a very large fund would soon be raised from which every case of distress arising from a colliery disaster might be met and adequately adjusted. The machinery for collecting the tax need not be very complicated. If coal merchants were put under the necessity of exacting the homeopathic dose on the delivery of every ton of coal to a purchaser, and of recording its receipt, collectors could call at stated intervals to receive the amounts. A central office in London, with the necessary subsidiary arrangements, would render the plan complete. A great national colliery family relief fund would thus be established, which would spare people the knowledge that in addition to the horrors of a pit "accident," the relatives of sufferers were plunged into the deepest destitution and misery. The address was received with great applause.

MINING AND STOCK EXCHANGE NEWS OF THE WEEK.  
Messrs. F. W. MANSELL and Co. (Sworn Stock and Share Brokers), Pinners Hall, Old Broad-street, write to us as follows:

**VAN (Lead).**—Since 1869 this great mine has paid in dividends nearly 250,000/; last year its dividends amounted to over 40,500/; notwithstanding a considerable expenditure met by revenue properly chargeable to capital. The mine was purchased by the present company for 46,000/., and the ore already sold has realised a sum exceeding 500,000/; the monthly returns are 500 tons of lead and 150 tons of blonde, valued at more than 8000/ in face of the large outlay incurred during 1875 in reconstructing and enlarging the dressing-rooms and machinery (by which manual labour of some 80 hands have been saved), and the other working facilities of the mine otherwise improved, the quarterly dividends have been increased. Henceforward a large monthly output may be anticipated, as well as a considerable reduction in the cost. From the time this property was introduced upon our market we have always pointed to it as a steady, sound, and progressively improving investment. Now, we have no hesitation in pointing to Van as an investment that can safely be left to our children as a reliable source of income. To those unfamiliar with the history of this mine, and who probably may be equally unaware how often a permanent income may be obtained by securing an interest in a sound mine while its shares are yet low in value, should know that Van shares not many years since were purchased largely at prices varying from 8/- to 10/- per share, since when there has been paid in dividends 16/- 13s. 6d., while the resources of the property have scarcely been tapped, or its producing capabilities fairly brought into play—its riches have been so rapidly developed that it has been mechanically impossible to construct the necessary appliances commensurably with the developments, although an immense deal has been done in this direction. Before the lode had been cut in the 60 fm. level, the ore reserves were valued at 2,000,000/., lead at the time being 12/- per ton, whereas the price now realised is from 15/- to 16/. Viewing the extraordinary manner in which this wonderful lode has increased in size and richness from the 15 fm. level to the 105 fm. level, the almost prophetic statement which Captain Williams, the manager, made in the year 1873, just now possesses peculiar interest. Capt. Williams said "that, generally speaking, large wide lodes are called flats, which, as is doubtless known to many, are sometimes suddenly cut out, but in Van all theories upon that point must have long since vanished. We have now got into the settled country. I always had great confidence that the lode in the 60 would be cut rich, and my anticipations having been abundantly verified, I have still greater confidence as to the result in the 75. As yet about 2 ft. of the lode has been seen in the 60, but I can describe its appearance as nothing but a quarry of lead. It may perhaps be an interesting point for scientific men to know that for three hours after the lode was cut one might have thought there was at least half-a-dozen railway trains in the mine by the gas rushing into the vughs and converting them into whistles. For three hours there was not a spot of water to be seen in the 45, which all practical miners regarded as the most favourable indication for having a rich lode the whole length. Not only is the ore ground lengthening in depth, but when I look at the shape and form of it I am very much tempted to say we are yet only just on the crust of the deposit." The improvements and discovery we announced last week show how correctly Capt. Williams read the Van Mine from its earliest history. We still recommend the purchase of these shares, although during the week the price has further advanced about 8/-.

**EAST VAN (Lead).**—Referring to this property in 1872, we informed our readers that it immediately adjoined the world-famed Van; that it contained the same masterly lode, that its character at East Van was precisely the same as in the old shallow workings at Van before the deep adit level had been driven upon it, and that its average width in the Van adit was 5 fms., and the flookan, or soft, 5 fms.; but that at East Van the lode was 10 fathoms wide, and the flookan the same width. We also mentioned that when productive at Van it was productive throughout, and that by comparing Van at shallow depth with the indications at East Van we expected large deposits of lead would be met with under the soft, or flookan, which at Van for some distance at the surface forms a cap on the back of the lode. If our memory serves us correctly, Capt. Williams once said that he had to work for some years in Van under far less favourable indications than those at the time presented in East Van; and in 1872 the Chairman of the company, Mr. T. C. Mundey (since deceased), addressing the shareholders, said—

"Turn a deaf ear to every report except that from the manager, for no man can possibly know more of the exceptional character of the lode, and no one better able to speak with confidence as to its future, whether in Van or East Van." The information just to hand is the strongest and most substantial proof yet shown of the soundness of the above opinions, the lode having been cut in the 25 under adit worth 50/- per cubic fathom, giving backs of not less than 70 fms. To show the lode holds to surface may be mentioned the circumstance that the water was cut at about 10 fms. deep in the new shaft, distant about 100 fms. from the eastern boundary of Van, and 15 fms. in advance of the present cross-cut. While the East Van shareholders cannot well over-estimate the great importance of this discovery, it is equally important to the shareholders in Van, as it proves beyond doubt that this wonderful lode continues of value throughout the 400 fms. of unexplored ground, eastward between the present workings in Van and the East Van boundary, also from the latter point to the new shaft in East Van. The latest information of the presence of gas may be regarded as most satisfactory, as throughout the history of Van this

gas has always been the harbinger of rich deposits; hence we find Capt. Williams feels himself justified in saying that "I feel convinced we are going to have a very good mine here."

**PATELEY BRIDGE LEAD MINES AND SMELTING COMPANY.**—This group of mines has 20 well-defined fissure veins, only a few of which have as yet been most imperfectly wrought. The whole can be effectively wrought by means of adit levels, thereby permanently saving the large and increasing cost of pumping machinery, and all its attendant disadvantages. A well-informed correspondent writes: "That the Pateley Bridge Lead Mines form a consolidation of properties unequalled in value and extent by any other range of home lead mines ever hitherto possessed by a single company." This would seem to be a strong statement when one recollects Van, Roman Gravels, Tankerville, Great Laxey, and many others, are each the property of a separate company. The statement, however strong it may seem, is clearly based upon realised facts, as with rude and inadequate appliances, and unpractical, un-minerlike (therefore expensive) development, the Pateley Bridge mines have yielded for many years considerable profits. Like the rich mines above enumerated, the skilful application of new capital cannot fail to place this important range of mines among our most favourite dividend-yielding properties. Smelting is being carried on at the company's own mines. In this particular, as in many others, the Pateley Bridge Mines are unique. Not only are the smelting works the property of the company, but the smelting fuel is found thereon, costing only the labour of accumulating and carting it to the works. If numerous rich veins of lead, inexpensively worked, with a ready and effective means of converting the produce into a merchantable condition, thereby realising the smelters' as well as the miners' profits—if, we say, with these favourable conditions, the Pateley Bridge Mines do not in a short time exceed in productiveness as well as dividends any series of lead mines in which the investing public have had an opportunity of securing an interest upon advantageous terms, it will arise from mismanagement, of which those who are entrusted with it are incapable. We look to see the Pateley property occupy a leading position among our most successful home lead mines. A comparatively small output will yield large dividends, for this reason, that while the working costs are small, and great the natural facilities for working the property, it has not been weighted by any dead or nominal capital.

**ROMAN GRAVELS (Lead).**—Anxious as we always are to correct any inadvertent error that may creep into our remarks, and at the same time apologising for the mistake, we beg to append the following communication with which the secretary has favoured us:—

DEAR SIRS.—An error appears in your notice of this company in the *Mining Journal* of Saturday last. You give the dividends as being paid 13,000/-, whereas 6,500/- (exclusive of income tax) has been paid in dividends since the commencement of the company, in 1871.—F. F. WILSON, Sec.

**EBERHARDT AND AURORA (Silver).**—This property will, no doubt, be the leading silver mine of 1876. To recent shareholders it may be useful to know the mines are situated in Treasure Hill, White Pine county, Nevada. The longitudinal axis of Treasure Hill is in a line nearly north and south, and from the town of Hamilton at the extreme north to the junction of Shermantown and Applegarth canyon at the extreme south end, the distance in the direct line is about five miles. A line from east to west, through the centre of the hill, cutting the North Aurora Mine, will measure little short of two miles. The high crest of the hill is about one mile in length north and south, and has an average altitude above its base of 1600 ft. This elevated crest forms an irregular sloping bench, highest along the east side, and sloping 10° to 20° towards the west. This upper sloping bench or plateau includes Pozonip Chloride, and Bromide Flats, along its western border, and the great ore channel of the Aurora, Ward Beecher, and Hidden Treasure mines along the eastern and higher portions near the summit of the ridge. From the eastern edge of this plateau down to the east side of the hill the descent is very rough and abrupt for a distance of 600 ft. or 800 ft., and to the intersection of a large vertical vein of calc-spar that courses north and south along the east side of the hill, near the foot of the cliffs and steep ground. This spar vein marks the line of fracture and displacement of the lime strata on the east side of the hill. From this line of fault the lime beds dip westerly at angles varying from 10° to 20°, until a similar spar vein and fault are encountered at the foot of Chloride Flat, west of the plateau. On the west side of the sloping plateau of Treasure Hill is found a north and south line of fault of similar character as that seen on the east side, but the upper beds have been denuded from that portion of the country west of the fault, and left no data of reliable character from which to measure the vertical extent of the misplacement. All the strata west of this fault to Shermantown canyon have a dip to the east at a high angle. These two great lines of displacement on the east and west sides of Treasure Hill are the most prominent longitudinal lines of vertical faulting of the strata. Another prominent feature is the system of intersecting fissures from east to west. The most noted of these, and the one on which the greatest vertical movement has taken place, is that which crosses the hill at the Eberhardt Mine, and at the south end of the elevated plateau. There are at least three well-marked lines of fissure crossing the Aurora and Ward Beecher Mines—one crosses the hill near the north end of the Ridsdale Chamber. The displacement is probably not more than 25 or 30 ft. vertically, the downthrow being on the north side of the fissure. Another crosses the hill through the Ladies' Chamber and east shaft, and still another cuts through the Ward Beecher Mine. These two last-mentioned fissure lines are from 90 to 110 ft. apart—that is to say, they are 90 ft. apart at the Ward Beecher shaft, and 110 ft. apart on a north and south line drawn the Ladies' Chamber. These lines of faulting converge west and diverge east, and at the crest of the hill, east of the works, they are 300 feet apart. We purpose next week giving some further particulars of the geology of these mines. The advices during the week from private sources are most favourable, confirming the opinion we have always expressed from the time we first drew attention to the property.

**HYDRAULIC GOLD MINING.**—The "blue cement" is sometimes changed into the hardest kinds, yielding only to the constant application of drill and powder. This cement is generally very rich, but has to be submitted to a crushing process in mills similar to quartz mills. In such cases the hydraulic process can only be applied till this blue cement is encountered, but it produces the double benefit, extracting not only gold from the upper strata, but also freeing the blue cement from the encumbrances, and making thus its breaking up a comparatively easy matter. Next to the blue lead or cement yellowish or reddish ground is found, generally very rich. It is known in some localities under the name of "rotten boulders," and is composed of quartz, gravel, and boulders of clay-slate. This deposit is from 5 ft. to 25 ft. in thickness, in some localities even thicker. It is rather soft and easily worked, consequently excellent material for the hydraulic. The blue lead and yellow gravel, or rotten boulders, are followed by the principal gold-bearing strata, consisting of quartz, gravel, and sand, overlying "flour gold" in sufficient quantities to make the working of these upper strata sometimes very remunerative. These different deposits gain their full characteristics only toward the deeper or more level portions of the channel or basin, and are less pronounced towards the sloping river or shore. On the bars of the present rivers great bodies of sand are found on the sloping rim-rock, which, under the influence of water, become quicksand, and form the greatest obstacle to the sinking of shafts or inclines. This sand seems to be nothing but crushed quartz, and yields in many instances small particles of gold. In hydraulic mining it is rather an advantage, as it offers no resistance to a stream of water, and facilitates the caving of any superincumbent strata. Small streaks of a very hard brownish cement, from 1 in. to 2 in. thick, may separate the different gravel deposits mentioned above. These are easily crushed by the falling of the bank or the blow of the sledge, and thus disposed of. In almost all deep gravel deposits a sedimentary deposit is found, which is known under the name of pipe-clay. This deposit is generally found in huge masses near the rim-rock or shore.

**BLUE TENT HYDRAULIC (Gold).**—We are pleased to find that our first anticipations are about to be realised. The information this week is in every respect highly satisfactory, and shareholders may look forward to early dividends. The profits are expected to be

sufficient to meet the interest upon the debentures, and leave a considerable margin for division upon the ordinary shares.

**ARGENTINE (Gold).**—Important advices are looked for during the ensuing week. As they are expected to contain some details in regard to portions of the property not previously reported upon, their arrival is awaited with much interest.

**STOCK EXCHANGE GENERAL MARKETS.**—Following up our previous remarks on low-priced securities, we may add that a careful examination of the prospects of the stocks is most important before an investment is made. Often those stocks which seem to possess the smallest chances most unexpectedly turn out the greatest prizes. Investors can scarcely hope unassistedly to do very much towards discovering the most likely stocks to have a great rise in the future unless he has peculiar means of knowledge. This class of securities being constantly the object of speculation, their prices are affected by the general causes which influence the values of other stocks, and there is an addition to the special circumstances that affect them individually. The low figures at which these stocks are sometimes quoted make what appear to be small movements in reality large, at the same time the similarity of the difference shown between the highest and lowest figures in different years is in some cases remarkable, and can be made the means of continuous profits.

**FOREIGN BONDS.**—The market for foreign bonds throughout the week has been in a very sensitive condition, owing to the large weak speculative account open for the rise; the result has been that the least event occurring likely to affect any particular department reacts upon others with more or less severity. Investment stocks have been more in favour, the dividends having in many cases been taken off, making the stocks look very cheap. Egyptian securities have fallen very considerably upon several adverse rumours; but the main cause will, we fear, be presently explained by the still continuing embarrassment of the Egyptian Government, notwithstanding the recent advance of 4,000,000/- by the English Government, and that an attempt is being made to patch up Egyptian finance in the old ruinous fashion by advances at usurious rates, which require incessant renewal, leaving the borrower at the end of each term in a more hopeless position. It cannot be long before a new crisis supervenes, which will show the Egyptian Government the folly of temporary expedients, which must altogether come to an end if Mr. Cave's mission is to bear fruit. Turkish bonds of all descriptions have also declined; about two-thirds of the amount required for Jan. 23 are already in hand at Constantinople, but there is some difficulty in remitting the money to England without serious loss, in consequence of the exchange being against Turkey; there are indications, too, that the balance yet to be made up will be provided in due time. Our railway market up till Thursday was firm, and stocks generally show a strong tendency to advance; the weekly traffic returns on Wednesday were generally very satisfactory.

#### THE COAL TRADE.

Mr. J. R. Scott, the Registrar of the London Coal Market, has published the following statistics of imports and exports of coal into and from the port and district of London, by sea, railway, and canal, during the year 1875:—

#### IMPORTS.

By sea.	Ships.	Tons.	By Railway and Canal.	Tons.
Newcastle	2282	1,125,872	London & North-Western	1,080,495 2
Seaham	223	100,719	Great Northern	1,003,519 0
Sunderland	1083	725,175	Great Western	583,505 8
Middlesborough	27	13,682	Midland	1,668,333 0
Hartlepool	1000	339,911	Great Eastern	677,113 15
Scot	209	65,328	South-Western	33,871 8
Welsh	93	27,777	London, Chatham, & Dover	6,501 0
Yorkshire	420	93,019	Southern	14,093 9
Duff	5	2,071	Grand Junction Canal	4,594 10
Small coal & cinders	169	41,412		
Total	5496	3,134,948	Total	5,070,046 12
Imports during 1874	5238	2,27,719	Imports during 1874	4,695,769 2

#### Comparative Statement, 1874 and 1875.

By Sea.	Ships.	Tons.	By Railway and Canal.	Tons.
Jan. 1 to Dec. 31, 1875	5496	3,134,948	Jan. 1 to Dec. 31, 1875	5,070,046
Jan. 1 to Dec. 31, 1874	5238	2,27,719	Jan. 1 to Dec. 31, 1874	4,695,768
Increase—present year	258	407,127	Increase in the present year	374,278

#### EXPORTS.

Railway-borne coal passing "in transitu" through district.	Tons.
Sea-borne coal exported to British possessions, or to foreign parts, or to the coast	87,447
Ditto, sent beyond limits by railway	60,949
Ditto, by canal and inland navigation	10,788
Railway-borne coal exported to British possessions, or to foreign parts, or the coast	2,812 = 74,549
Ditto, by rail beyond district	18,722
Sea-borne coal brought into port and exported in same ships	124 = 18,846
Total quantity of coal conveyed beyond limits of coal duty district during December, 1875	183,448
Ditto, December, 1874	156,452

#### Comparative Statement, 1874 and 1875.

Total distribution of coal from Jan. 1 to Dec. 31, 1875	1,827,124
Total distribution of coal from Jan. 1 to Dec. 31, 1874	1,736,960
Increase in the present year	90,164

#### General Statement, 1874 and 1875.

Increase in coals imported by sea during the present year	407,127
Increase in ditto by railway	374,278 = 781,405
Deduct increase in coals exported	90,164

Total increase in trade within London district during present year 691,242

The following remarks are on the coal trade in London during 1875.

The gross imports of the year 1875 of coal brought by sea and railway conveyances within the limits of the London district (a radius of 15 miles round St. Paul's) exhibits the extraordinary total of 8,204,892 tons, and suggests an increase in supply over that of the year 1874 of no less a quantity than 780,000 tons. This may be taken as an indication of a revival of trade in London, together with an extension of the supply of railway-borne coal to remote country districts in the south and south-west. We may apportion the distribution of this unprecedented increase as follows—100,000 tons may be considered as representing the growing expansion of the through trade for country consumption. The remaining portion—700,000 tons—may be allowed as absorbed, firstly, by the extension to our ever-increasing population of the use of gas; secondly, to household consumption in the gradual extension of greater London; and thirdly, to the increasing use of coal for steam purposes as applied to manufacture, the iron industries of shipbuilding (in which no sign of revival appears) alone excepted. The trade in coal to London during the past year has been subject to far less fluctuation and uncertainty than for a year or so previously. Prices have ruled somewhat high comparatively, yet not more so than might reasonably be expected when the greatly increased cost in every form of getting coal is taken into consideration. We conclude by pointing out the somewhat significant fact that for the first time for many years the sea-borne imports exhibit a larger increase of supply than their rivals in competition, the railways, the former ranking (or an increased quantity of 407,000 tons, while the latter exhibit the still satisfactory increase of 374,000 tons over last year).

#### THE TIN TRADE.

Nov. 30.	Dec. 31.	Dec. 31.	Dec. 31.
1875.	1875.	1874.	1873.
Straits and Australian, spot	Tons 5,691	5,499	2,998
Ditto, landing	259	519	2,998
Straits afloat	700	805	1,580
Australian, afloat	1,725	2,183	1,300
Banca, on warrants	410	811	488
Ditto, Trading Co.'s hands	2,750	2,061	3,738
Ditto, afloat	322	403	300
Banca, spot	900	970	988
Ditto, afloat	800	1,000	715
Total	Tons 13,557	14,251	12,004

Deliveries during the month in

London	858	724	695
Ditto, Holland	356	548	484

Total Tons 1,214

Prices of Straits

Shipments from Straits, in December Tons 575

Ditto, Australia, ditto 750

During 1874.

Shipments from Straits to London Tons 5,149

Living ore at 60 per cent. net 6,071

Deliveries of foreign tin in London 7,639

London, Jan. 1.

We have no change to report in our tin market during this month. Extreme quiet has again been its chief characteristic, prices being, on the whole, tolerably well maintained. Buyers, as a rule, continue very cautious, and, looking at the general condition of trade everywhere, there seems but little likelihood

of any change for sometime to come. The enquiry for Banca has continued slow, with very little variation in price. There are now sellers at 50 fl., which is our closing quotation. In contracts for delivery ex January sale a

it accelerates the process of poling, and reduces the consumption of wooden poles.

In a recent number of the "Journal of the Geological Society of Ireland" Dr. Tichborne calls attention to the occurrence of thallium in an iron ore from Russia. The ore appears to be a mixture of iron pyrites and zinc-blende, but it is uncertain which of these minerals contains the trace of thallium detected in the mixed ore. Dr. Emerson Reynolds has found thallium associated with the Irish cuprous iron pyrites.

Fluorine is an element which appears to be widely disseminated through Nature, commonly in association with compounds of calcium. Dr. Tichborne finds that it is frequently present in calc spar, and has detected it in even the purest and clearest crystals. It is noteworthy that so much fluorine exists in some of the calcium phosphates that the pipes connected with the apparatus for the preparation of superphosphates become plugged with silica, which is deposited from the gaseous fluoride of silicon produced in the operation.—*Athenaeum*.

#### DRAINAGE OF THE HALKYN MINING DISTRICT.

Owing probably to the natural exclusiveness of Englishmen the association of all the mineowners in a district to secure the performance of some great work for the common benefit of them all has seldom, if ever, been attempted in Great Britain, and hence many valuable mining localities have been suffered to lose their commercial reputation altogether through neglect to remove some obstacle which, although not insuperable, is too great to be dealt with by any individual proprietor. In America tunnel companies are quite common, and the work which they have done has not only proved of immense advantage to the mines affected, but has also been highly remunerative to the tunnel companies themselves. For many years past the mines of the Halkyn district have suffered severely from the absence of any united action to facilitate the removal of the water, the result being that a large number of mineral deposits acknowledged to be valuable are entirely unavailable below the water level. It is to these circumstances that may be traced the disappointment which has attended the working of such mines as the Rhosesmor, Hendre, Glanyrafon, Nant, Bryn Alyn, and many other mines in the same locality—the prospects of obtaining mineral being such as would fully justify an agent in making a favourable report, yet the difficulties met with upon attempting to raise them being such as to render the profitable working of them impracticable.

That these obstacles to the remunerative working of the Halkyn mines may no longer exist a special Act of Parliament has been secured, incorporating the HALKYN DISTRICT MINES DRAINAGE COMPANY, with a capital of 100,000*l.*, in shares of 10*l.* each, his Grace the Duke of Westminster, Lord Richard Grosvenor, Mr. J. T. Bankes, of Soughton Hall, and Mr. R. Nicholson, of Abbotsfield, being upon the board of direction, and Messrs. John Taylor and Sons, of Queen-street-place, the engineers. It is proposed, in the first instance, to issue one-half of the capital, and from the nature of the company's business no doubt is entertained that it will prove a satisfactory investment. It is explained that the company has been incorporated for the purpose of draining by means of tunnels of adit levels, to be driven at sufficient depth, a rich and extensive mineral district in the parishes of Halkyn, Cilcain, Northop, and Mold, in the county of Flint, comprising an area of about 7414 acres. The company has power, by the Act of Parliament to levy a royalty upon every ton of mineral raised within this area, the amount per ton depending upon the nature of the mineral and the locality of the mine.

For the purposes of the Act the district is divided into two areas, so as to distinguish the mines which, from deriving more direct advantage, are required to contribute more largely than the others. In No. 1 district are the Deep Level and Pant-y-Go, the Rhosesmor, the Nant-y-flift, and the Great Hendre; whilst in No. 2 district are found East Rhosesmor, Pen-yr-Orsedd, Tyddyn-y-Gwynt, East Hendre, North Hendre, Bryn Gwiog, Fron United, Cycoed, South Hendre, Mwnwyl, Erw-felin, Rhyd-y-Mwyn, Bryn celin, Pen-y-fron, Llyn-y-pandy, Pant-y-mwyn, Modlyn, Pant-y-Buarth, East Pant-y-Buarth, Glan Alun, Mold Mines, and the Fron Fownog Mines, besides considerable tracts of mineral land which have never been explored at all. It is truly stated that very large sums have from time to time been expended in endeavouring to unwater many of the above mines by means of steam and water power, but all attempts to do so effectively and continuously have failed; one by one they have ceased to be worked, and now there is scarcely a single mine in the district which is worked below the water level, although it is notorious that in many of the mines rich and valuable deposits of ore were left buried in the water.

Having become obvious that isolated efforts to unwater particular mines were perfectly futile and a mere waste of money, and that the real requirement was a comprehensive and well-devised general system of drainage by means of a series of adit or water levels driven to certain points in the district for the common benefit of all the mines, and to the cost of which all should contribute in proportion to the benefits derived, the necessary powers have been obtained from Parliament with that single object; the company will have nothing whatever to do with mining operations; as such, they will be left to mining companies proper, and this company will confine itself solely to the execution of the work sanctioned by the Act for draining the mines in the district. The projected tunnels appear to have been laid down with the greatest judgment, with a view to secure the utmost benefit to the mines, and considering the auspices under which the company is formed, there need be no doubt that the works will be carried on with vigour. By the Act powers are given to the company to acquire the existing "Halkyn Deep Level," which has already been driven from the Nant-y-flift stream, into which it empties itself, for a distance of 1*1/2* miles: this level was commenced in 1818 by the then Earl Grosvenor, since which a very considerable sum has been expended upon it. Powers are also given to drive five tunnels, of an aggregate length of about three miles—three in a continuous line, in a southerly direction, commencing at the southerly end of the Halkyn Deep Level, and terminating at a point near Bryn Alyn, at Rhyd-y-Mwyn, on the Mold and Denbigh turnpike road; and two branches—one running in an easterly direction for a distance of 742 yards, towards the well-known Rhosesmor Mine, and in the lode which has been so productive at that mine; the other in a westerly direction for a distance of 741 yards towards the equally well-known Great Hendre Mine, and in the lode which has produced so largely at that mine.

It is proposed in the first instance to repair the existing deep level, and to drive by means of machinery, and with every possible dispatch, the No. 1 tunnel a distance of 1280 yards, to the South Pant-y-Go shaft in the take of the Rhosesmor Company, and competent mining authorities are of opinion that this tunnel alone will unwater a very considerable area, embracing Rhosesmor, Great Hendre, and other mines, so that the result of this will be ascertained before deciding upon the remaining tunnels. The financial prospects of the enterprise could scarcely be more encouraging, since the company is empowered by the Act to levy from every occupier of a mine drained by the company's works a royalty of 2*1/2*. 10*s.* for every ton of lead or lead ore raised, if the mine be within area No. 1, and 1*1/2*. 10*s.* if it be within area No. 2; for every ton of blende or calamine, 2*s.* 6*d.* and 1*s.* 6*d.* respectively; and similarly 6*d.* and 4*d.* per ton on coal, cannel, or shale; 3*d.* and 2*d.* per ton on ironstone or iron ore; 2*d.* and 1*d.* per ton on fire-clay; and for every ton of other minerals raised, 5 per cent. of the saleable value thereof on the pit bank, if the mine be within area No. 1, and 3 per cent. if it be within area No. 2. The royalties are payable by the mine occupiers, but by the Act, prescribed allowances in respect thereof are to be made to such occupiers by their landlords. It is confidently believed that so soon as the first tunnel is commenced operations will be resumed in many of the before-mentioned mines, which are now practically at a stand, and that the prospect of this long talked-of project being actually realised will infuse fresh life into the district, and give that impetus to mining which is so much needed, not only in the interests of mine owners and lessees, but also of the public.

The mines which will be first benefited by the drainage works are the Deep Level and Rhosesmor. From the Deep Level alone a considerable royalty is expected, and with regard to the Rhosesmor

it is mentioned that at that mine three pumping-engines have been erected, and very large sums from time to time expended in attempts to unwater it, company after company having been formed in consequence of the wealth of ore known to exist under water there; such attempts were finally abandoned by the present Rhosesmor Company in 1871, but they having thereby satisfied themselves of the continued productiveness below the water level of the old lode from which former companies had obtained large quantities of ore, and having since, by their operations above the water level, discovered several parallel veins, all proving productive, and one of which they consider equal to the old vein, have been active in promoting the Act of Parliament, and their shareholders contribute largely to the required capital. No. 1 tunnel will be driven at a level 30 yards to 40 yards below their lowest level in the old lode, and upwards of 50 yards below the workings in the recently discovered parallel veins; and if they should raise only 100 tons per month, which they consider a very low estimate, the royalty payable to the company from their mine alone will be 3000*l.* a-year, or equal to 6*d.* per cent. on the first issue of 50,000*l.*

The above are two only of the many mines within the company's drainage areas, and it cannot be doubted that the company's operations will enable other important going mines to be prosecuted below the water level, and be the means of at once setting to work other productive but now flooded and dormant mines, and amongst the earliest perhaps the Great Hendre Mine, which has been one of the best mines in the district, and is now idle only because it is drowned out, two very powerful engines having been found unequal to keep it continuously drained; in addition, there are considerable tracts of virgin land, which will, when drained, almost certainly be explored and worked. It is further pointed out that this company will enjoy a special and peculiar advantage over most projects, as when the district is once drained its annual expenditure will be, comparatively speaking, trifling; there will be no engines to be kept going, and no fresh works to be executed, but simply the staff charges of the company, and the cost of keeping the tunnels in repair, which, owing to the character of the strata, will be inconsiderable.

#### UTICA, ITHACA, AND ELMIRA RAILROAD COMPANY, STATE OF NEW YORK, U.S.

The readers of the City Articles of the daily or commercial papers cannot fail to have noticed the great rise that has recently taken place in the value of securities of the first-class railroads of the United States, and especially those more immediately connected with the State of New York. Amongst such securities we have every assurance that the bonds of the Utica, Ithaca, and Elmira Railroad will soon take a foremost place, the line being now fully completed and at work. The balance of 300,000*l.* (\$1,500,000) First Mortgage Seven per Cent. Bonds, amounting to 150,000*l.* (the first moiety having been already issued) in bonds of 200*l.* or \$1000, is now offered for subscription by Messrs. Henry S. King and Co., of 65, Cornhill, and 45, Pall Mall; at 92*1/2* per cent., or 18*s.* the 200*l.* bond, upon which the interest will be paid half-yearly, at the offices of Messrs. King, at the rate of 7*s.* 8*d.* per cent. The bonds are to be paid by instalments extending to April next, or in full on allotment under discount at the rate of 4 per cent. per annum, the first dividend falling due on July 1 next. The bonds are redeemable at par in 192*1/2*, and are to be provided for by the operation of a cumulative sinking fund of 800*l.* per annum, and accruing in trust, beginning on Jan. 1, 1875, and to be applied prior to 1902 annually in the purchase of bonds at a price not exceeding 5 per cent. above their par value—a most fair principle both to the railroad company and the bondholders. The bonds at the price of issue give a return of about 7*s.* 7*d.* per cent., irrespective of the premium divided on their redemption. The line of the Utica, Ithaca, and Elmira Company is 85 miles in length, passes through the centre of the State of New York, and has been built to supply a direct line of uniform gauge between the coal fields of Pennsylvania and the north-eastern districts, where the coal is much in demand; and also to supply a means of intercommunication between several large towns and populous counties. In connection with no less than ten other lines of railway, and gives, with its connections, the shortest line between Elmira and Corning, the two principal towns of Southern New York, and Utica and Syracuse, which are among the most important of the interior towns on the line of the New York Central Railroad, the communication between which has hitherto been carried on by means of a very circuitous route of railway, the gauge of which differs from the standard of the country, or by a combined railway and canal route, which is not only inconvenient but totally unavailable five months in the year. The capital stock of the company is \$2,000,000, of which \$1,14,782 has been paid up; and the bonds which form a first mortgage on the property and revenue of the company are issued to pay off in part any obligations incurred during construction, the total cost of which was \$2,661,000. The line was completed and opened for through freight traffic in November last, but it had been for some time in partial operation for local traffic, the revenue from this source alone being sufficient to pay the working expenses and the interest on the bonds. It is estimated, founded on the experience of the local traffic and engagements for coal freight already entered into, that, after providing for working expenses at 60 per cent., and allowing for gold, bearing a premium of 14 per cent., that the net revenue will be sufficient not only for the service of the bonds, but to give a return to the shareholders of about 9 per cent. per annum on the paid-up capital. The line traverses a district in which iron manufactures, mineral products, agriculture, and the timber trade have already assumed considerable importance, and are constantly on the increase. Messrs. Poor, the proprietors of that well-known work, "Poor's Railroad Manual of the United States," have examined the line and its prospects as railway experts, and have reported that the bondholders possess in the mortgage a first-rate security, perfectly unassailable, whilst there is every ground for expecting that the traffic will not only amply provide for the bonds, but return handsome dividends to the shareholders; and Mr. Wm. Wilson, C.E., of George-street, Westminster, reports that, "according to the standard adopted in the United States, the railway has every right to be considered a first-class line;" and, "taking all things into consideration, there can be little doubt that it will prove one of the most valuable and profitable railroads in the State of New York." What more can or need be said?

#### FOREIGN MINES.

MENZENBERG.—R. K. Roskilly, Jan. 5: Setting Report: Dickins' engine-shaft to sink below the 45 to six men, at 270 marks (1*3/4*. 10*s.*) per lachter (6*ft.* 10*1/2* in.); the ground here has a most congenial character, being composed of a very fine clay-slate or killas, which, judging from its present appearance, we think will improve; this shaft is 1*ft.* below the level, and its sinking is being pushed on with all possible dispatch. The 45 to drive north of cross-cut to two men, at 36 marks (1*1/2*. 10*s.*) per lachter; the lode is 4*ft.* wide, composed principally of quartz with spots of copper ore—promising lode; this end is about 2*fm.* north of cross-cut. This level to drive south of ditto to three men, at 36 marks (1*1/2*. 10*s.*) per lachter; the lode here 1*ft.* 3*in.* wide, and producing occasional stones of copper ore, and indicating an improvement; this end is 6*fm.* 3*ft.* 9*in.* south of cross-cut. Our engine and pitwork are in good condition, and working well.

LINARES.—Dec. 29: Pozo Ancho Mine: The 100 fm. level east of Warne's shaft is in a very powerful lode, producing 1 ton lead ore per fathom. The same level west is unproductive. The 85, west of Crosby's, and the 65, west of Peill's shafts, are without improvement. The 75, west of Crosby's, is suspended while a winze is being put through to ventilate it. The lode in the 55, west of this shaft, is smaller, and less productive than it was, now yielding 1 ton per fathom. The lode in the 90, west of San Francisco's shaft, is of no value. The lodes in the 90 and 65, east of this shaft, are small, producing 1*1/2* ton per fathom each. The 75, east of same shaft, is opening a good length of payng ground, worth 1 ton per fathom. In Peill's engine-shaft, sinking below the 90, the men are getting down remarkably well. No. 203 winze will shortly be holed to the 100; the lode produces 5*s.* 10*l.* per fathom. The lode in No. 205 winze has diminished both in size and value, worth 1*1/2* ton per fathom. The stoves yielded very well in the past month, and are now without any change of importance. The ordinary surface works are being carried on very steadily, and the machinery is in good condition. We estimate the raisings for January at 200 tons.—Quintenito Mine: The 90 fm. level, west of Taylor's engine-shaft, is in very hard granite. The 80, west of this shaft, is poor; the lode is now in contact with the cross-course. The 45, east and west of Cox's cross-cut, is in a small lode, of no value. The 80, east of Taylor's, is in a wide and open lode, letting out water. In the 65 and 55, east of Addis's shaft, there is no improvement, the lodes being poor. The 55, west of San Carlos, is entirely without ore. The 65, west of this shaft, is in a large lode, producing occasional stones of ore. The lode in the 80, west of the same shaft, has fallen off very much, and now produces 1 ton per fm. The 80, east of San Carlos, is in a strong and regular lode, but without ore. The lode in the 65, east of this shaft, is large, with good stones of ore in the upper part of the end, worth 1 ton per fathom. The 55, east of Judd's shaft, is suspended. The lode in the 45, east of this shaft, is small and poor. Nothing of value has been met with in the 32 cross-cut, north of Judd's shaft. In Cruz's winze, below the 65, the ground is hard; the lode is large, and spotted with lead. Marco's winze is holed to the 50, the lode yielding 2 tons per fathom. Closer's winze, below the 45, is in a very small lode, worth 1*1/2* ton per fathom. We estimate the raisings for January at 150 tons.

LANESTOSA.—Dec. 29: In Judd's shaft, sinking below the 100 metre level, the limestone has now lost its siliceous character, and it is hoped that better progress will be made. The driving on the cross-course, west of the 100 south, is now several metres beyond the point at which the lode was expected, and there are no signs of its presence yet. In the ventilation winze, below the 100, the lode has widened out to 4*ft.*, chiefly calcite, without ore. The 80 metre level south shows no change; the lode is 3*ft.* wide. The cross-course in the cross-cut from the 80 south is thrown considerably out of line by the north and south vein met with, and there being a few metres more to reach the presumed line of the western lode, driving is being continued at a right angle through hard limestone. In No. 4 stope in the back of the 60, the ore still holds about the cave, but it is likely to be all worked out during the ensuing week; the lode is now worth 1*1/2* ton of lead and 1*1/2* ton of calamine per fathom. Stopping is about to be commenced north of the cross course in the 60 metre level south; the lode yields 1*1/2* ton of lead per fathom. In the adit level on counter lode, driving north, a little calamine has been met with during the last few days, but not enough to value. It is expected the returns will be 10 tons of lead and 10 tons of calamine and mixed ores.

FORTUNA.—Dec. 29: Canada Inca: The lode in the 110, west of Judd's shaft, is small at present, and does not contain enough lead to value. The 30, east of San Carlos shaft, is passing through disordered ground. The 60, west of San Pedro's shaft, is in hard, poor ground. The lode in the 60, east of San Frederico's, is large

and strong, producing 1 ton per fathom. The 50 and 40, east of this shaft, are without ore to value. The lodes in the 90, east of Addis's shaft, and the 80, west of Kennedy's, contain a little lead ore in each end. The 90, west of Kennedy's, still produces 1*1/2* ton per fathom. The 80, east of this shaft, is in a very rich lode, worth 3 tons per fathom. Abercrombie's shaft is down the required depth for the 40; the lode is worth 1 ton per fathom. Good progress is being made in San Pedro's shaft, below the 60. The lode in Sancho's winze, below the 25, maintains its size and value, 1 ton per fathom. Enrique's winze, below the 80, is in a large well-defined lode, opening good tribute ground, worth 2*1/2* tons per fathom.

LOS SALIDOS: The lode in the 120, west of Buenos Amigos shaft, produces 1 ton per fathom. In the 110, west of San Carlos shaft, the lode is small, and the ground hard. In the 120, east of Morris's shaft, there is a regular lode, the lode being small. The lode in the 120, east of Morris's, still continues disordered. The lode in the 110, east of San Carlos, has fallen off a little in value, but still produces 2 tons per fathom. The 100, east of San Miguel's, still continues unproductive. The lode in the 35, west of Swaffield's shaft, is compact, and free from the influence of the cross course; it yields 2 tons per fathom, and shows good indications for further improvement. The 45, west of this shaft, also produces 2 tons per fathom. The lode in the 55, west of Palgrave's engine-shaft, continues small, and of no value. The 65, west of Palgrave's, yields 1*1/2* ton per fathom, and in the eastern end 1 ton per fathom; these ends have been suspended for the past week, owing to an increase of water, the pitwork being overpowered for the time. The 55, east of Palgrave's, is without ore. In Buenos Amigos shaft, below the 120, the men are working well, but the granite is very hard for sinking through.

ALAMILLOS.—Dec. 29: The 30, west of San Francisco shaft, is in a strong and regular lode, yielding 1*1/2* ton lead ore per fathom. The lode in the 50, east of La Magdalena cross-cut, has improved, and looks promising, yielding 1 ton per fm. The 55, east of Taylor's engine-shaft, is in hard ground; it will be holed to San Enrique's shaft in a few days. The lode in the 55, west of San Adriano's shaft, is hard and strong, producing 1 ton per fathom. The lode in the 50, east of San Victor's shaft, has failed in the past fortnight, and is poor. The cross-cut south from this shaft at the 60 has intersected the lode, and driving east on its course has been commenced. The same level west is in a strong well defined lode, but of no value at present. The lode in the 40, west of San Carlos shaft, is small and unproductive. The 30, east of Air shaft, is opening a good length of profitable ground, now yielding 1 ton per fathom. The lode in the 40, east of this shaft, is small, with good stones of ore in the bottom of end. There is no improvement in the 50, east of Crosby's. The 50, east of Judd's shaft, is in a large lode with good stones of ore, but not enough to value. The 60, east of this shaft, is without improvement. The ground in the 70 cross-cut, north of Judd's, is very hard, and there remain several metres to drive to the lode. The 30, west of Swaffield's shaft, having holed to Luis's winze over the end, the driving is resumed in a lode small and poor. In Taylor's engine-shaft, below the 55, the ground is hard, and the men progressing slowly. San Enrique's shaft is deep enough for the 55, and will be holed shortly. The sinking of Cox's shaft below the 50, which is off the lode, is resumed. Martinez and Juan's winzes, below the 25, are unproductive. In Davey's winze, below the 40, the lode is cut off by the main slide. Roza's (new) winze, below the 25, east of Addis's shaft, is in a lode worth 2 tons per fathom. A new winze (Ciro's) below the 30, east of air-shaft, is in a lode yielding 1 ton per fathom. The stoves yielded the usual quantity of ore in the past month, and are now without any alteration worthy of notice. The machinery is in good condition, and the ordinary surface works are going on very regularly. We estimate the raisings for January at 200 tons.

For remainder of Foreign Mines, see to day's Supplement.]

The following report was received too late for insertion in its proper place:

LANALDOES (Lead).—John Kitto, Jan. 6: I am pleased to inform you that the lode in the bottom of the 60, east of engine-shaft, has greatly improved, and is now worth from 25 to 30 cwt.s. of lead ore to the fathom, with an exceedingly good and promising appearance. This is, I consider, a highly important and encouraging feature, being in the very bottom of the mine, and only about 10 fathoms from the engine shaft. The eight saltmen are busily engaged cutting the lode at the 60, preparatory to resuming the sinking of the shaft for a new 72 fm. level, which will be begun as soon as possible. The tribute pitches, or bargains, are looking pretty well, and are yielding a fair quantity of ore, and are being worked at prices varying from 4*d.* to 6*d.* per ton. The dressing is also proceeding satisfactorily, and we have sold 20 tons of lead ore at 1*4/5*. 9*s.* per ton.

A WEALTHY MINER.—California is much exercised by the statement put forward on the death of Mr. W. B. Astor that New York had produced the richest man in the world, and the organs of the Pacific States are anxious to prove that they can produce a millionaire of larger proportions than any on the coast of the Atlantic. Their representative man is Mr. John Mackay, who 10 years ago was working as a mining labourer in an exploring shaft in Virginia City, Nevada Territory. He was then earning \$4 a day. He is now the principal member of a firm which owns the Consolidated Virginia Mine, the richest mine in the world, and some dozen of others in Nevada and other gold-producing districts. The net income of Mr. Mackay from his mines and bank is estimated at \$10,000,000, or \$2,000,000, sterling, per annum.

STEAM-ENGINES.—The improvements invented by Mr. WEATHERHOGG, of Swindon, and Mr. TAYLOR, of Jersey City, U.S., consist in the balancing of slide and rocker valves and stop and regulator valves of steam-engines by means of wedges or cones, which bring the valves and back plates from their seats, and allow of priming. Also in applying the wedge valves above described to compound engines, and for blowing steam through the cylinders of the same by causing the wedges or cones to draw the valves from their facings. Also in improvements in the steam chests of compound engines, whereby the workings of an admission valve placed in the central chamber of the steam chest and connected to the governor or other moving parts of the engine, passes high pressure steam when desired from the chest or boiler, and the low pressure valve for mixing the low with the high pressure steam for increasing the power of the engine. Also in causing the induction valves of compound and other engines to have a partial rotating and reciprocating motion for the purpose of regulating

## Registration of New Companies.

The following joint-stock companies have been duly registered:-

**CO-OPERATIVE RESIDENTIAL CLUB COMPANY (Limited).**—Capital 200,000/-, in 5/- shares. To erect clubs, hotels, &c., and to carry on business as a co-operative society. The subscribers are—H. Bartlett, 22, Derwent-road, South Pengo Park, 6; J. W. Fisher, 1, Regent street; S. Marshall, Delta House, Shepherd's Bush, 6; Robert Fyers, jun., Army and Navy Club; J. Sebintzler, 18, Brooklyn-road, W. 2; C. Eyre, Roll's Chambers, 6; and W. F. Pearse, 2, Eland-terrace, Lavender Hill, 1.

**SEA INSURANCE COMPANY (Limited).**—Capital 500,000/-, in 10/- shares. To take over the business of Messrs. Jones and Co., underwriters, of Liverpool. The subscribers (who take 500 shares each) are—R. Alexander, Water-street, Liverpool; R. P. Wood, 21, Water-street, Liverpool; F. H. Ismay, Water-street, Liverpool; W. H. Jones, Exchange Buildings, Liverpool; J. Macdonald, Liverpool; J. Barron, Liverpool; and E. S. Jones, Exchange Buildings, Liverpool.

**WILLIAM JOHNSTONE AND CO. (Limited).**—Capital 25,000/-, in 500/- shares. To act as agents in London, Manchester, and elsewhere for Messrs. W. Johnstone and Co., steamship owners of Liverpool. The subscribers are Wm. Johnstone, sen., Rock Ferry, 1; R. J. Johnstone, Hibernia House, Cardiff, 1; G. J. Tweedy, Cloughton, Cheshire; F. H. Rogers, Bedford-street North, Liverpool, 1; E. Johnstone, Chapel street, Liverpool, 1; and J. William Johnstone, 5, Chapel-street, Liverpool, 44.

**CATTLE TRANSIT AND METROPOLITAN MEAT MARKET SUPPLY COMPANY (Limited).**—Capital 100,000/-, in 10/- shares. To establish places where cattle may be put to slaughter with the ultimate view of their being sent to market. The subscribers (who take one share each) are—Sir C. A. Wood, Chesham-place; C. R. Wood, Lieutenant R.N.; G. F. Ormsby, 43, Palace Garden-terrace; Chas. Fotheringham, 54, Lime-street; J. C. Wall, Bristol; N. A. Burt, Victoria-road, Cotham, Bristol; W. Westlake, 65, Mornington-road, Regent's Park.

**THOMAS ASHTON HARRISON AND COMPANY (Limited).**—Capital 80,000/-, in 100/- shares. To acquire a cotton-spinning business. The subscribers are—T. A. Harrison, Stalybridge, 120; A. P. Ashland, Gee Cross, 30; J. Hibbert, Brookbank, Godley, 30; O. Hibbert, Stalybridge, 6; A. Dinsington, Stalybridge; W. Morton, Hyde, 1; J. R. Beard, 5, Charlotte-street, Manchester, 1; C. J. Agate, Charlotte-street, Manchester, 1.

**TAYLOR'S PATENT SEWING MACHINE COMPANY (Limited).**—Capital 100,000/-, in 10/- shares. To acquire a cotton-spinning business. The subscribers are—T. A. Harrison, Stalybridge, 120; J. Turner, Driffield, 120; Richard Davison, Driffield, 40; T. E. Turner, Beverley, 1; H. Angus, Driffield, 1; R. Taylor, Clyde Villa, Willesden, 120; and R. M. Thusill, 3, Redcliffe Villa, Surbiton, 40.

**INDEPENDENCE MARINE SALVAGE AND STEAM-PUMP COMPANY (Limited).**—Capital 4000/-, in 10/- shares. To carry on business as marine salvors.

**ENGLISH CHASE MACHINE COMPANY (Limited).**—Capital 10,000/-, in 10/- shares. To manufacture Chase's patent pipe-cutting and screw-threading machines in Europe.

**MOSTY SILVER-LEAD AND BLENDLE COMPANY (Limited).**—Capital 50,000/-, in 10/- shares. To take over the plant, &c., of the Talare Mining Company, together with the ores standing in the mine. The subscribers are—T. V. Clarke, 12, Great Winchester-street, contractor 500/-; J. H. Foulkes, Wrexham, 10; T. R. P. Royle, Hanglegreen House, Chester, 10; J. Dawson, Rhyd, land agent, 10; A. Eytom, 34, James-street, Liverpool, bat manufacturer, 10; J. Roberts, Fox-lane, Liverpool, merchant, 10; E. R. Cummins, Gracechurch-street, merchant, 10.

**NORTHERN LAND AND BUILDING INVESTMENT COMPANY (Limited).**—Capital 10,000/-, in 10/- shares. To carry on business as a land and building society. The subscribers are—D. E. Stamford, 21, Collingwood-street, Newcastle; T. Parker, 2, Market-street, Newcastle, 50; J. Robinson, Newcastle, 4; J. Wardrop, Sunderland; John Hope, Hexham, 40; J. C. McPherson, Newcastle; G. Scott, South Shields, 40; and H. Prosser, Victoria-chambers, Newcastle.

**FINANCIAL OPINION COMPANY (Limited).**—Capital 30,000/-, in 5/- shares. To carry on business as newspaper proprietors, and publish a paper to be called *Financial Opinion*. The subscribers (who take one share each) are—J. Nassau, sen., Lavender Hill, Wandsworth; Arthur Cohen, 6, Holland Park; Jules Gaudet, 4, Inverness-terrace; W. H. Bauer, 22, Acme-lane, Brixton; T. H. Cardwell, Upton Green, Tisbury; F. Griffiths, Salisbury; the Earl of Onslow, 18, Eaton-place; J. S. Woofstone, Stafford, Tamworth, and W. R. Brook, Addiscombe.

**ANDERTON AND COMPANY (Limited).**—Capital 10,000/-, in 10/- shares. To acquire a mill finishers' business.

## Mining Correspondence.

## BRITISH MINES.

**BAMPFYLDE.**—James Juleff, Dec. 29: The stopes in the back of the 90 continue to look well. No. 1 is worth 10/- per fathom, and No. 2 worth 9/- per fathom. In the 102 end west the lode is looking very promising, and worth for 7/- per fathom. All the other points of operation are looking well, and are without alteration since last report.

**BEDFORD UNITED.**—William Phillips, Jan. 6: In taking down the lode in the different levels we find them rather improved. The lode in the 103 east having increased in value, and is looking exceedingly promising, we continue to cut through the lode in the levels, and consequently postpone giving their size and value. The general appearance of the mine indicate a favourable report next week.

**BLUE HILLS.**—S. Bennetts, A. Gripe, Jan. 1: We have drawn up the pitwork from the 65 at Hitchins' shaft for the purpose of sending it down to the 75 at the engine shaft, and have made the necessary preparations for draining this part of the mine to proceed with the sinking of the shaft below that level forthwith, and have also cleared some 20 to 30 fms. of the south adits, by which we hope to keep up a further portion of the surface water during the wet seasons.

**BOG.**—W. T. Harris, J. Barkell, Jan. 5: The rise in back of the 175 east, on south lode, is not yet holed, but we expect it to be so by to-morrow morning; we shall then resume the driving of the level east. The lode in the 163 east, on the south lode, has much improved for lead, now worth 1 ton per fathom, and most promising indications for further improvement. The ground in the cross-cut, driving north at the 130, continues most encouraging; a little water oozes from the fore-breast. All the other bargains and the pitches are making fair progress, and without change calling for remark.

**BONFLYD.**—Thomas Kemp, Jan. 5: Tutwork Settings for January: No. 2 Shaft, North Lode: The fork referred to in my report of last week under the 110 fathom level is down to the required depth, and the men are employed putting down shaft collar, &c., which will be completed by to-morrow, when we shall take off penthouse at the 96, and put the shaft in order, so as to send the machine kibble to bottom, which work I expect to have finished by Tuesday next, when a contract will be let to a full staff of men to drive westward on the lode at the 110. Four men to drive the 46 end, west from shaft, at 190/- per fathom; the part of the theodolite opened by this drivage is producing a little lead, saving work for dressing. The ground is exceedingly hard for exploring, but I expect shortly to see an improvement here both for mineral and progress.—No. 2 Shaft, Middle Lode: Two men to drive the 52 end west from Lloyd's cross-cut, at 175/- per fathom, which includes removal of the stuff. The part of the lode carried by this drivage is composed of favourable veinstone, carrying strings of steel ore, and for the width of level—4 ft. is worth from 12 to 15 cts. of ore per fathom. It should be remembered that this level is being extended into whole ground, and should we be successful in opening up a good run of ore in this direction we shall entirely have a new mine. Four men to drive the 40 end east from shaft, at 140/- per fathom, which includes the removal of stuff. The lode here is looking exceedingly promising, and at times producing excellent stones of ore. Two men to cross-cut through the lode south in the adit, east from shaft, at 100/- per fathom, which includes removal of stuff; the lode, so far as cut, is principally composed of blue-slate, carrying small strings of spar, spotted with ore. The different tribute pitches throughout the mine continue to yield their usual quantity of ore—from 18 to 20 cts. per cubic fathom. These bargains are set for two months, which terminates on our next setting day. We have favourable weather for surface operations, with full supply of water for all purposes. Dressing and drawing going on regularly, and machinery in good order.

**CRENVER AND WHEAL ABRAHAM UNITED.**—W. Thomas, J. Hammill, Jan. 5: Sturt's shaftmen are still engaged in taking out the side of the level for platt at the bottom of St. George's shaft.—Blewitt's Shaft: The 234, in taking down the south part of the lode, which is now 3 ft. wide, will yield 1 ton of copper ore per fathom, having a very promising appearance; we are of opinion that we have reached the ore ground gone down in the bottom of the 220, where we have driven over good tribute ground for 60 fathoms in length; this is an important point.—Richard's Shaft: The 220 end west we have set to drive and stop the back to twelve men, at 11s. in 1/2; the lode is 7 ft. wide, and will now yield 3 tons of copper ore per fathom; it is a good-looking lode, and looks kindly to further improve: this end is about 12 fathoms from being under Wiliams's shaft. Our tribute department is looking tolerably well. We have now engaged on tribute about 140/- men.

**CWM DWFYDOR.**—J. Mayne (dresser), Jan. 6: No. 4 South Lode: In the level driving east of the shaft the lode is 2 ft. wide, and has improved to 2½ tons of silver lead ore per fathom. The lode looks masterly and strong. In the bottom of the level, and I believe the ground in depth will be easier for sinking and driving. We shall at once commence to sink the shaft on this lode another 10 or 12 fms. below our present working, in order to prepare for driving and stoning at that depth.—Stones: The two stopes over the back of this level (No. 4 south), west of the shaft, are each yielding 25 cts. of silver lead ore per fathom. We shall very soon have sufficient ground east of the shaft to put two additional stopes, and in that direction the lode is getting richer.—No. 4 North Lode: The lode in driving the level east of the shaft is yielding fully 10 cts. of silver lead ore per fathom, and is looking better to day than I have seen it. It carries a good branch of lead and spar on the north side of a large lode. A flocken slide has crossed it about 2 ft. behind the present end. This lode will certainly make mineral in depth, or as it goes east, it being such a champion lode.—Incline: The incline is completed, also the drum and other gear, and works first rate.—Crusher House: We have brought up the heavy timber beams over the incline, and they are now on the walls ready to receive the crushers.—Dressing-House: The dressing-house is nearly completed, and the lead house is in course of building.

**CWM ELAN (NEW).**—Wm. Goldsworthy, Jan. 1: In the 30, west of shaft, the lode is disordered by a soft joint coming out of the footwall: when we cut into this joint the end was quite dry, but as we extend this end is again letting out a large stream of water, but I think this is only a temporary change. In the same level, east of shaft, the lode has fallen off a little in value. In the winze sinking under the 20, west of the shaft, the lode will yield 20 cts. of lead and blonde ore per fathom. The stopes in the same level, on the south lode, have much improved in appearance, and now look like making ore shortly. We are carrying a wide level here. The lode reaches from side to side of it, and as above stated, the indications are to my mind very favourable.

**LLANRHIAIDR (Lead).**—E. Pascoe, Jan. 5: The ground in the deep adit continues favourable for progress; no change worthy of notice in the character of the lode. The level, west of winze below No. 4, is yielding ore, but not to value. The cross cut south of No. 4 level has been suspended: have put the men to stope over No. 3, where there is a short piece of ground extending to the No. 2 level; value of stope, 5/- per fathom. The lode in No. 3 level has a very kindly appearance; it is producing a little lead, with indications of improvement. The stopes east of No. 2 rise, over No. 4, is of about the same value as when last reported—viz., 7/- per fathom.

**LOVELL (THE).**—J. Prisk, E. Kempthorne, Jan. 6: In the 30, winze sinking below the 40 the granite seems to be lengthening, and the tins one we are breaking here is of a rather low quality; we have cut in north, but find nothing in that di-

rection. In the 40 end east the ground is still hard; lode small, and unproductive, No. 1 stope in back of 40, east of shaft, is worth 50/- per fathom. No. 2 stope in back of 40, east of shaft, is worth 53/- per fathom. No. 3 stope, east of shaft, in back of 40, is worth 60/- per fathom. In the 30 cross-cut south we are pleased to report we have pricked into the south lode, and so far as seen it contains good work for tin; we shall lose no time in cutting through it, after which we shall be in a position to report its value. The dressing goes on well for our next sale of tin.

**MARKE VALLEY.**—James Seccombe, James Stenlake, Francis Reinald, Jan. 7: In the 70 cross-cut, driving south, we have cut the south part of Rosedown lode, and so far as cut into will yield 1 ton of copper ore per fathom. The lode in the 20 west will yield 1 ton of copper ore per fathom. No other change to notice.

**MELINDUR VALLEY.**—John Kite, Dec. 31: The engine shaft is now down 10 fms. below the 26, and very good progress is being made in sinking. The lode has completely changed its underlay from north to south, and has altogether gone out of the shaft. This is a very important feature should it continue, but we cannot ascertain what the result will be until we get the shaft down to the 38 (2 fms., and then cross-cut to the lode; but I anticipate a favourable change, particularly as all the main producing lodes in the neighbouring mines underlay in the direction that this has taken. The lode in the 14 east has improved, and is now yielding some ore and looking very kindly, but there has been no change in any other part of the mine worth reporting to since my last report.

**MONYDD GORDDU.**—R. Rowse, Jan. 5: In consequence of the frost but little has been done in Burnett's shaft since my last report thereon: the present depth is 2 fms. 1 ft. 3 in. below the 12. Most of the new pupils are on the mine, the whole promised to be delivered this week, and so we hope to fix the same and resume sinking the following one, after which I trust nothing will prevent our sinking straight away to the 24 as fast as possible, when a cross-cut will be put out to a very interesting point to see. From the above the 12 east has only been extended 2 fms. 2 ft. in the past month. The lode here is very promising, and more so now than for some time past. We have about 7 fms. more to reach the point of winze coming down from adit, in which to the north a very fine lode is standing, and on or before the level reaches the point of winze I fully expect an improvement. Good progress has hitherto been made in sinking the winze, but the water is increasing as we deepen. The winze and 12 end will arrive at the point of communication at the same time. The south lode at the adit looks very promising for the length opened, worth in the back 10 and in the bottom 15 fms. per fathom, and there cannot be a doubt, seeing that it proved so well in the 12, that when the winze is through for ventilation and the lode laid open that very profitable stoning ground will be at once commenced. The two stopes over the adit, on the main lode, continue to yield about 25 cts. to the fathom: the more I see of this most masterly and promising lode (the main one) and the others in the property the stronger is my opinion that in the Monydd Gorddu there are great bodies of minerals, but the lodes must be explored before it can be extracted. All works, both under and above ground, are kept moving with the greatest regularity and attention, and I await official instructions as to whether I shall send out samples for 20 tons of silver-lead, or go for a larger quantity.

**NEW CHIVERTON.**—Jas. Trewartha, Jan. 6: The engine-shaft is now 11 fms., 1 ft. 6 in. below the 35; lode worth 29/- per fathom. The lode in the 5 north is producing good lead work, and looking promising for a good improvement. Good progress is being made in rising above the 35 north against the winze, where we hope to effect a communication by Jan. 13. The lode in the 35 south is improved, now worth 7/- per fathom, and looking promising for further improvement. The rise above the back of the 35 south is going up slowly by the side of the lode. Nothing new in the tribute department since last report. We sampled to day two pails of silver-lead ore—No. 1, computed 7 tons; No. 2, computed 9 tons: for sale Jan. 13.

**NEW CONSOLS.**—Richard Pryor and Son, Thomas Jenkin, Henry Vial, Jan. 4: We have no change on which to report since last week. Our stopes continue to yield their quantities of rich quality ore. All surface operations are progressing well. Saturday next being our pay and setting day, a full report shall follow.

**NORTH BUSY.**—H. Trevelyan, Dec. 27: Since our general meeting of Dec. 23 last we have driven the bottom end west 21 fathoms 2 feet: for this drivage the lode has been small and poor. Within 6 feet of the present end a lode, running about 10° north of west crossed our main lode—main lode running 20° south of west. Since we passed the new lode the one we have been working on has improved in size, and is producing more copper and blende, letting out water freely: the water is subsiding fast from the level above. We have about 10 fathoms more to drive our bottom end to get under the productive ground. We have sampled to day two pails of silver-lead ore—No. 1, computed 7 tons; No. 2, computed 9 tons: for sale Jan. 13.

**OLD CONSOLS.**—Richard Pryor and Son, Thomas Jenkin, Henry Vial, Jan. 4:

We have no change on which to report since last week.

**OLD WHEAL BASSET.**—R. Pryor, E. Adams, Jan. 5: The underground points of operation throughout this mine are without noteworthy change since last reported on. We have broken and hauled to surface about 18 tons of copper ore, and are doing our best to get a good sampling.

**FRANK MILLS.**—J. Nicholls, J. Rowe, jun., Jan. 5: We are pleased to state that in crossing east from Orchard shaft, at the 45, we have discovered two very promising lodes—the first about 2 ft. wide, producing 3 cts. of lead per fathom, and the second (which is about 4 fms. further east) is 3 ft. wide, worth 8 cts. of lead per fathom: each of these lodes has a very promising appearance; the strata are very congenial, and being in virgin ground we consider it a very important discovery. We are now cross-cutting east from the 40, and expect to reach the first of these lodes in about 5 fms. driving, and should they be found as productive as we anticipate no time will be lost in driving about 7 or 8 fms. of cross-cut to prove them at the 75 also. The cross-cut west from the 72 north is into the lode about 12 fms.; in the breast there is a little lead, and as the water is issuing freely we are of opinion the best part of the lode is still to the west: should a discovery be made here it would be of great importance, as nothing has been done within a very considerable distance of this point. The engine-shaft is completed to the 160, and is now being cut.

**GAWTON COPPER.**—G. Rowe, G. Rowe, jun., Jan. 1: The lode in the 117, east of King's engine-shaft, is showing a very kindly appearance, being over 5 ft. wide, and yielding good stones of ore. The lode in the winze sinking below the 117 is looking kindly, and worth 15/- per fathom. The lode in the stopes in the back of the same level is worth 3/- per fathom. The rise in the back of the 105 is worth 9/- per fathom. The winze sinking in the bottom of the same level is worth 3/- per fathom. The lode in the winze sinking below the 35 is worth 3/- per fathom. The lode in the stopes in the back of the 95 is worth 18/- per fathom. The lode in the 82 east is 6 ft. wide, composed of capel, spar, and munde, mixed with ore. The stopes in the back of the 70 are worth 9/- per fathom. Our last samplings were weighed off yesterday 171 tons 13 cts. 2 qrs.

**GLYN.**—J. Roach, Jan. 6: We are driving the 15 fm. level cross-cut by six men:

the contract has been let to drive to the north wall of the lode to insure the utmost expedition. I fully expect to intersect a good lode of lead at an early date.

**GREAT RETTALLACK.**—John Harris, Jan. 1: The lode in the 45 east is not

looking quite so well for blende to-day, worth from 2 to 3 tons per fathom, a large patch of white killas having been met with, so as to displace the blende towards the footwall of the lode, but I think it will wear out again shortly.

**GREAT WEST VAN.**—T. Hodge, Jan. 6: I have been all through the mine to-day, and am pleased to inform you that the lode in the 46 west end continues to improve as we advance; we blasted a hole in the lode this morning, which threw out some fine rocks of ore; so far as seen (2½ ft. wide), no north wall; the lode looks healthy and strong, with much water. The open cavities look splendid, all lined with rich lead ore in a cubical form; I value the lode at 18 cts. of lead per fathom. We are surely entering on a good course of lead here. Nothing new in the 46 west. The 40 west end is by the side of lode; the end is nearing up in line with the 46, and in a few days we shall start a rise from the 40 to communicate with the 34. In Eliza's shaft during the past week our progress has been slow, owing to a hard floor of ground crossing the shaft, but I think we are nearly through it, so I hope in my next report better progress. In the 34 north cross-

**GUNNISLAKE (Clitter).**—W. Skewes, J. C. Seccombe, Jan. 5: The rise in the back of the 188 is communicated with the winze in the bottom of the 178, and has opened up a splendid piece of ore ground, also giving good ventilation to the bottom of the mine. The lode in the 176 west is worth 6/- per fathom, and in the eastern end it is worth 10/- per fathom. The rise in the back of this level east is worth 9/- per fathom, and the stopes in the 188 west are worth 12/- per fathom. The lode in the 188 west is worth 7/- per fathom. The stopes in the back of the 188 west are worth 10/- per fathom. The lode looks healthy and strong, with much water. The open cavities look splendid, all lined with rich lead ore in a cubical form; I value the lode at 18 cts. of lead per fathom. We are surely entering on a good course of lead here. Nothing new in the 46 west. The 40 west end is by the side of lode; the end is nearing up in line with the 46, and in a few days we shall start a rise from the 40 to communicate with the 34. In Eliza's shaft during the past week our progress has been slow, owing to a hard floor of ground crossing the shaft, but I think we are nearly through it, so I hope in my next report better progress. In the 34 north cross-



have not been touched for years, and by further developments the chances are very favourable for discovering other chambers of ore that now lie hidden.

\* \* \* With this week's Journal a SUPPLEMENTAL SHEET is given, which contains—Original Correspondence: Notes on Harton Collieries; Double Action Air-Pump for Collieries (Stephen Tresider); Richmond Consolidated Mining Company; Corsican Mines; Explosives in Mining (Stephen Tresider); Our Mineral Deposits, and How to Find Them (Jas. Williams); Dowsing, &c. (Charles Kneebone); Manganese Mining—1874-75; Horizontal Continuity of Lodes; Gold in Wales (T. A. Readwin); Mining in Cardiganshire (Sampson Trevelyan); Foreign Mining and Metallurgy—Foreign Mines—Meetings of the Colonial Bank, Frontino and Bolivia, Iton Rhyn Collieries, Blue Tent, Emma, and New British Iron Companies.

## The Mining Market: Prices of Metals, Ores, &c.

METAL MARKET—LONDON, JAN. 7, 1876.

IRON.	£	s.	d.	£	s.	d.	TIN.	£	s.	d.	£	s.	d.
Pig, g.m.b., f.o.b., Clyde.	3	3	6	—	—	—	English, ingot, f.o.b...	83	0	84	—	—	—
Scotch, f.o.b., all No. 1 ...	3	0	3	15	0	—	“ bars	85	0	—	—	—	—
Bar, Welsh, f.o.b., Wales	8	10	0	7	0	—	“ refined	86	0	87	0	—	—
“ in London	7	10	0	7	12	5	Australian	78	10	0	—	—	—
“ Stafford, ”	8	15	0	10	5	0	Barrels	86	0	—	—	—	—
“ in Tyne or Tees ”	7	0	0	—	—	—	Straits	79	0	79	10	0	—
“ Swedish, London ”	15	10	0	—	—	—	FLASKS OF 75 LBS., WARE.	10	10	0	—	—	—
Rails, Welsh, at works.	5	5	0	7	0	0	COFFER.	—	—	—	—	—	—
Railway chairs	—	—	—	—	—	—	Tough cake and ingot.	84	0	86	0	0	0
“ spikes	—	—	—	—	—	—	Best selected	87	0	88	0	0	0
Sheets, Staff., in London	11	5	0	12	15	0	Fiat bottoms	97	0	98	0	0	0
Plates, Staff., in London	10	15	0	12	10	0	Wallaroo, in warehouse	89	0	—	—	—	—
Hoops, Staff.	9	15	0	10	5	0	Burns and Currawang	88	10	0	88	15	0
Nail rods, Staff., in Lon.	8	15	0	9	10	0	Other brands	86	0	88	0	0	0
STEEEL.	—	—	—	—	—	—	Chili bars	81	10	0	32	10	0
English, spring	—	16	0	25	0	0	—	—	—	—	—	—	—
“ cast ”	—	35	0	50	0	0	—	—	—	—	—	—	—
“ Swedish, keg ”	—	18	10	0	—	—	—	—	—	—	—	—	—
“ fag. ham ”	—	21	0	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—
LEAD.	—	—	—	—	—	—	—	—	—	—	—	—	—
English, pig, common	—	22	15	0	23	0	0	Wire	—	93	4	—	—
“ L.B. ”	—	23	0	—	—	—	Tubes	—	—	—	12d.	—	—
“ W.B. ”	—	24	0	—	—	—	Sheets	—	9	—	—	—	—
“ sheet and bar ”	—	24	0	—	—	—	Yellow metal sheathing	73	—	—	—	—	—
“ pipe ”	—	24	10	0	—	—	Nails composition	93	—	—	10%	—	—
“ red ”	—	24	0	53	0	0	TIN-PLATES.	per box.	—	—	—	—	—
“ white ”	—	28	0	39	10	0	Charcoal, 1st quality	1	9	0	1	10	0
“ patent shot ”	—	21	0	—	—	—	2nd quality	1	5	6	1	7	0
Spanish	—	22	2	42	7	6	Coke, 1st quality	1	3	0	1	4	0
—	—	—	—	—	—	—	2nd quality	1	1	6	1	2	0
SPELTER.	—	—	—	—	—	—	Black	—	per ton	17	0	17	10
Silesian or Rhenish, in English port, &c.	—	25	0	0	25	10	Canada, Staff., or Gln., at Liverpool	15	0	0	15	10	0
English, Swans.	—	26	0	—	—	—	Black Taggers, 450 of	30	0	0	—	—	—
Sheet zinc	—	31	0	0	32	0	—	14 x 10	—	—	—	—	—

\* At the works, £1. 1s. 6d. per box less for ordinary; 1s. per ton less for Canada; £1. 6s. per box more than £1 quoted above, and add 6s. for each X. Tin-plates 2s. per box below tin-plates of similar brands.

REMARKS.—The increased stringency in the money market with which the year has opened, together with the interruption to business which is always observable during the early days of the new year, has tended to limit the transactions of the past week. Although the actual condition of the markets presents no new feature of present encouragement, yet in many branches of the metal trade a hopeful view is taken of the future. So much wise caution has been for so long a period exercised that the new year is not expected to bring disasters in its train, but the hope is entertained that as the busy season approaches there may be in measure a resuscitation of trade very generally. In the most important particular—that of the relations between masters and men—there seems to be a hope that a mutual understanding is being arrived at, by which the former, perceiving that their interest is involved in the welfare of their men, will be content to grant a good day's wage for a good day's work, and the demands of the latter will be regulated not by the rate of pay in the days when trade was inflated, but by what under existing conditions their employers can afford to give. Bank rate was raised to 4 per cent. on Dec. 30 last, and on Jan. 6 was further advanced to 5 per cent., and some uncertainty seems to overhang the future course of the money market, but in the existing quietude of the metal market this does not operate to the degree that it might be expected to do.

COPPER.—At the beginning of the week Chili bars are reported to have changed hands at 81. 5s. to 81. 10s. g.o.b. usual cash; and special brands, 83. 10s.; but upon the announcement of charters from the West Coast for the last half of December of 3300 tons, consisting of 1950 tons bars for England, and 900 tons ore and regulus and 450 tons bars for the Continent, it was rather expected that prices would hardly have been maintained, the statistical position of the metal being distinctly not so favourable to the firmness of the market as previous to the announcement; but as has been so often remarked in connection with the Copper Market when it ought to recede it maintains its position, and when there is every reason to expect an advance the market goes back, or remains dull and inactive. The maintenance of prices is in a considerable measure to be accounted for by the efforts made by interested holders of Chili bars to sustain the market artificially; but it is questionable whether, unless fresh demand springs up or supplies fall—thus improving the statistical position of the metal—prices can be upheld. The condition of the Money Market is at the moment against it. Chili bars, g.o.b., are quoted 81. 5s. to 81. 10s.

IRON.—The first week of the year must not be taken as a sample for those that follow. Under any circumstances the holiday week is an idle week, but owing to the existing depression, the amount of business transacted during the past week has been in most of the iron districts very small indeed. In the North of England there is a rumour that the owners of the West Hartlepool Rolling Mills consider the prospects of the future sufficiently encouraging to induce them once more to enter upon active operations, and there are grounds for the anticipation that as the spring advances business may look up a little, and that the accruing results may show an improvement upon the experience of the year that has just closed. There are some few enquiries abroad in the Middlesbrough market for rails, but up to the present time the enquiries have not culminated in orders. The value of pig-iron is becoming enhanced, and in consequence of this quotations for manufactured or all-decriptions are fully maintained, but at the same time there is no change to report in the demand, which continues very sluggish. No. 1 pig-iron is quoted 57s.; No. 3, 62s. 3d.; and No. 4 forge, 50s. to 50s. 3d. The enquiry for pigs, both on home and foreign account, is on the increase, the demand especially for the direction of Scotland and Staffordshire. The wages arbitration question in reference to the North of England is coming off shortly, Mr. Bell, M.P., being arbitrator on behalf of the Cleveland district employers, and Mr. Macdonald, M.P., on that of the men.

In South Wales the state of the market shows no actual improvement, but still there appears in this district, as in the North of England, an expectation that as the season progresses business will become more active. There seems to be a real desire on the part of all concerned in the commercial welfare of the district to adopt such measures as are possible to bring about a restoration of confidence, and so soon as masters and men have come to a good mutual understanding the outside public will have grounds of assurance that they may with some degree of safety entertain projects involving an outlay in iron, and eventually give out orders for the same, which may induce a return to normal activity. Competition is now so great in the iron trade, as well as in other trades, that the large profits of former years are not likely soon to be made again, if indeed ever, and so much the better for the purchaser, but such conditions must be arrived at that employers and employees alike obtain an adequate return for the outlay of labour and capital expended upon the production of the finished material, and at the same time the purchaser must experience that he, too, is not a loser by the transaction.

During the last year, notwithstanding the restriction put upon production to meet the restricted trade of the country, the quantity of iron manufactured in the various centres of the iron industry, taking them altogether, was very large, but the resulting profit was very small. There is no reason to believe that the demand will decrease, but on the contrary, there is every reason to expect the exact reverse; and, as it is impossible to carry on trade at a continuous loss to any of the contracting parties, we may hope that the year 1875 will inaugurate a period of comparatively successful commercial intercourse. The following statistics of the Scotch pig-iron trade are interesting:—The production for the year was 1,050,000 tons, showing an increase of 244,000 tons over the production of the previous year. Throughout the year there were, upon an average, 21 more furnaces in blast than during 1875. At the present moment there are 113 furnaces in blast, against 121 a year ago.

The consumption of Scotch pigs in Scotland has during the year been 360,000 tons, and this supply has been increased by 220,000 tons from England, giving a total consumption of 580,000 tons, which is a larger quantity than has been utilised for 10 years. The total of the deliveries of iron by shipment and rail during the year has been 616,000 tons. This amount does not compare favourably with the experience of former years. The present stock of pig-iron amounts in all to 170,000 tons, of which 107,000 tons is in masters' hands, and 63,000 tons in storekeepers' yards. These stocks show an increase of 74,000 tons upon the stock held at the same time last year, but they are not up to the average usually held. It is a matter for congratulation that in spite of the stagnation in trade, and the increased make of 244,000 tons, the stocks should show so very small an increase. The total shipments for the year have been 624,500 tons, and the total excess of shipments in 1875 as against 1874 has been 79,500 tons. The average price of G.M.B. warrants has been 65s. 9d. during 1875, against 87s. 6d. in 1874, and 117s. 3d. in 1873.

The Scotch pig-iron market did not open until Tuesday, Jan. 4, when prices were steady. In the early part of the day business was done at 64s. 9d., after which prices advanced to 64s. 10½d., one month, and at the close the quotation was 64s. 6d., cash. On Wednesday prices were not so firm, business being done at 64s. 3d.; but on the succeeding day the lost ground was recovered, 64s. 4½d. being quoted for cash, and 64s. 7½d. one month. At the close there were buyers for cash at 64s. 3d. To-day the price is 64s. 10½d. to 64s. 6d.

SPELTER.—The market is quiet, but firm. Silesian rules at 25. 7s. 6d. to 25. 15s.; hard spelter, 19. 1s. to 19. 5s.

ZINC.—There were 140 tons London rolled offered for sale, of which 80 tons realised 23. 17s. 6d., with buyers at this price for a further quantity, but the balance was withdrawn at 20s. 5s. to 20s. 10s.

LEAD.—Smelters are fairly off for work, and the current demand suffices, with the present limited supply from the mines at home and abroad, to maintain the market. Good soft English pig is quoted 22s. 16s. to 23s.; soft Spanish, without silver, 22s. 2s. 6d. to 22s. 7s. 6d.

QUICKSILVER.—The market is quiet, at 10s. first hands.

TIN.—The market for Straits opened steady, at 80s. 10s. to 81s., and Australian at the same price; but as the week wore on the tendency was towards weakness, and business was done in Straits down to 79s. cash and 78s. 10s. net for the end of April. The announcement of the next public sale of the Netherlands Trading Company has been made to take place on the 28th inst., and the quantity to be offered is 23,100 slabs of Banca tin.

TIN-PLATES.—Makers are looking forward hopefully to a prospect of improvement in this industry, as it is hardly possible but that the coming year will be more fruitful in results than the last has been.

THE IRON TRADE—(Griffiths's Weekly Report).—Friday Evening.

The Scotch market for g.m.b. has improved 9d. per ton this week. The market closes this afternoon at 65s. 1½d. cash, 65s. 3d. a month open—sellers at the last figure. The closing price last week was 64s. 9d. No change in our London market this week. Business quiet all round. The ironmasters' Quarter-day will be held at Wolverhampton on Wednesday, and Birmingham on Thursday next. Meetings of the coalmasters of Cannock Chase and the Black Country were held yesterday. Mr. J. N. Brown presided over the former, and Mr. Fisher Smith, the Earl of Dudley's agent, the latter. Both districts have unanimously decided to decline to accede to the demands of the colliers for an advance of wages, this being a most inopportune moment to entertain the question.

Messrs. James and Shakespeare say—LEAD: Short supplies of Spanish have caused a further rise in this market, and English for prompt delivery has been sold up to 23s. per ton. This rapid advance has slightly checked the demand, and forward parcels meet with but little enquiry. The rates for foreign sorts are nominal, there being scarcely any metal offering for sale. TIN-PLATES meet with better demand, and makers are tolerably well supplied with orders. SPELTER is very scarce, and even at our highest quotations there is but little obtainable. QUICKSILVER has fallen to 10 guineas, at which figure it stood on Nov. 19 last, having in the interim risen to 13s. per bottle.

Mr. Murrant.—TIN: Foreign continues depressed, the tendency being apparently towards lower values, but so far as could be ascertained the quantity offering at the lowest point are very limited. The month's business reported was 1500 tons of Straits and Australian at 82s. 6d. to 79s. for cash and shipment.

COPPER: Although some little better has been made in Chili, the price of g.o.b.'s is not much better than that of a month ago. Meanwhile the stocks show a tendency to decrease, the European importations for the past year being fully absorbed by consumption. Top values have been paid for all parcels of ore or regulus, but bars can be obtained at a trifle below importers' prices from second hands. The month's sales are reported as 2300 tons g.o.b.s., and named brands at 80s. to 82s. 10s., according to brand and delivery. SPELTER and LEAD are better.

TIN-PLATES: More enquiry.—QUICKSILVER: Easy.

It would not be very difficult to show that the losses during the past year in foreign loans and financial companies generally have far exceeded the losses in British mines in the aggregate for the last 30 years. There are banks, too, that would not have advanced a single penny to support a *bond fide* and legitimate mining undertaking, but which have risked and lost millions sterling in the rotteness of accommodation bills. Yet without the mining industry of this country, the produce of which exceeds 36,000,000l. a-year, the arts, manufactures, and commerce of the world would soon be at a dead lock; and without combination, and consequently speculation, this mining industry could not be carried on. No one goes into it, whether searching for tin, copper, lead, iron, or coal, without risk and disappointments, and sometimes serious loss; but there are also great prizes to be gained, and fortunes have frequently been made by one stroke of the pick. This, indeed, is the fascination that induces many to go into pet schemes deeply and rashly, risking too much, in fact, on a single venture; whereas the prudent only speculate to a smaller extent in a judicious selection of five or six, on the principle of not putting all their eggs into one basket, and of securing success in the aggregate.

additional particulars of the new strike, which from private information is opening out satisfactorily. Exchequer,  $\frac{1}{2}$  to  $\frac{1}{2}$ ; news is shortly expected that the mill is running. Eureka,  $\frac{1}{2}$  to  $\frac{1}{2}$ ; the details of the meeting appear elsewhere. Tecoma,  $\frac{1}{2}$  to  $\frac{1}{2}$ .

The market for shares in the gold washing companies on the Stock Exchange has shown more animation during the week, and a fair amount of business has been transacted. Blue Tent,  $\frac{3}{4}$  to  $\frac{4}{4}$ ; Prof. Price cables that everything is progressing well on mines and ditch. The annual meeting was held on Wednesday, and a very interesting statement was made by the Chairman—that the aqueduct just completed was about the length and size of the New River, and capable of delivering as much water to the property as the New River Company does to London. He further stated that the company had paid since commencing operations nearly 9000/- for water, and had only been able to get a desultory and inadequate supply then. This expenditure will now be stopped, and of itself will constitute a good profit to the company, besides which the supply of water will be abundant and continuous. The details of the meeting will be found in another column.

Sweetland Creek,  $\frac{1}{2}$  to  $\frac{1}{2}$ ; the agent, Mr. G. D. McLean, writes that he has commenced another run with plenty of water. Cedar Creek,  $\frac{1}{2}$  to  $\frac{1}{2}$ ; Colonel Ludlum reports that he is making very good progress in running Yankee Tunnel, having completed over 100 ft. since last accounts. Washing is going on as reported, and the prospects for a good season are favourable. He reports that 22 in. of rain had fallen thus far, a quantity much above the average of former seasons. Birdseye Creek,  $\frac{1}{2}$  to  $\frac{1}{2}$ ; a letter from Mr. Powers, the agent, will be found in another column. Washing was proceeding steadily, and he adds that the prospect looks favourable for the outcome of present season. Shares are scarce, and have been slightly in demand at quotations. Oregon (pref.),  $\frac{1}{2}$  to  $\frac{1}{2}$ ; there is nothing particular reported from here since our last. Washing was continued on the Thos claim; and the work on the ditches, &c., was being pushed forward to completion.

Copper Mines have been without much quotable variation, except Cape Copper, which show a further advance, transactions having taken place at 39, closing 37 to 39. At Ookiep, the 80 fm. level has not yet intersected the rich ground; but the end east from No. 16 winze is spotted throughout with copper ore, and as the productive ground at the winze is only a few feet above this driving, the main bunch is fully expected to be cut into shortly; the 68 has further improved to  $\frac{1}{2}$  tons per fathom, and the other parts of the mine are favourably reported on. No material change is reported at Spectakel or the Trial Mines. The returns from Ookiep for the month were 950 tons of 29 per cent., and Spectakel 57 tons of 31 per cent.; 750 tons were sold on Dec. 28, at an average of 16s. 8d. per unit, realising approximately 15,550/- New Quebrada,  $\frac{1}{2}$  to  $\frac{1}{2}$ ; Rio Tinto,  $\frac{1}{2}$  to  $\frac{1}{2}$ ; ditto, Seven per Cent. Mortgage Bonds,  $\frac{1}{2}$  to  $\frac{1}{2}$ ; Rio Tinto (Spanish Coupon Bonds), 57 to 59; Russia Copper,  $\frac{1}{2}$  to  $\frac{1}{2}$ .

Great Wheal Vor,  $\frac{1}{2}$  to  $\frac{1}{2}$ ; the lode in West Metal shaft continues to improve, and is producing nearly a ton of tin to the fathom; other points are also breaking favourable. Penstruthal,  $\frac{1}{2}$  to  $\frac{1}{2}$ ; the mine continues to open up satisfactorily, and the lode going east at the 46 fathom level has improved for copper ore. Cathedral; the shaft is being pushed down through a hard bar of elvan, which has retarded progress considerably, but it is fully expected by the manager that a rich course of copper is underneath.

Subjoined are the closing quotations—

Ashington, 1 to $\frac{1}{2}$ ; Bog, $\frac{1}{2}$ to $\frac{1}{2}$ ; Carn Brea, 36 to 38; Devon Great Consols, 4 to 5; Dolcoath, 39 to 41; East Caradon, 1 to $\frac{1}{2}$ ; East Lovell, 4 to 5; East Van, 7 to $\frac{1}{2}$ ; Great Laxey, 18 to 20; Great Wheal Vor, $\frac{1}{2}$ to $\frac{1}{2}$ ; Hindon Down, $\frac{1}{2}$ to 1; Mark Valley, $\frac{1}{2}$ to $\frac{1}{2}$ ; Pateley Bridge, to $\frac{1}{2}$ ; Parva Mountain, 10 to $\frac{1}{2}$ ; Pennerley, $\frac{1}{2}$ to 1; Penstruthal, $\frac{1}{2}$ to $\frac{1}{2}$ ; Roman Gravels, 11 to $\frac{1}{2}$ ; Tankerville, 10 to 12; Thincroft, 15 to 20; Van, 31 to 32; Van Consols, 11 to $\frac{1}{2}$ ; West Chiverton, 15 to 18; West Tankerville, 1 to $\frac{1}{2}$ ; Wheal Grenville, 1 to $\frac{1}{2}$ ; Almada and Thirto, $\frac{1}{2}$ to $\frac{1}{2}$ ; Argenton, 6 to 7; Birdseye Creek, $\frac{1}{2}$ to $\frac{1}{2}$ ; Cape Copper, 37 to 39; Cedar Creek, 1 to $\frac{1}{2}$ ; Chontales, 16 to $\frac{1}{2}$ ; Don Pedro, $\frac{1}{2}$ to $\frac{1}{2}$ ; Eobhardt and Aragon, 8 to 9; Emma, 1 to 10; Exchequer Gold, $\frac{1}{2}$ to $\frac{1}{2}$ ; Jagatash, $\frac{1}{2}$ to $\frac{1}{2}$ ; Fronton and Bolivia, 1 to 10; Javall, 10 to 15; Last Chance, $\frac{1}{2}$ to $\frac{1}{2}$ ; New Quebrada, 3 to $\frac{1}{2}$ ; Richmond Consolidated, 7 to 7 $\frac{1}{2}$ ; St. John del Rey, 37 to 38; San Pedro, 2 to $\frac{1}{2}$ ; South Aurora, 4 to 5; Sweetland Creek, 2 to 2 $\frac{1}{2}$ ; Tecoma, 9 to 10; United Mexican, 3 to 4 $\frac{1}{2}$ ; Blue Tent, 4 to 4 $\frac{1}{2}$ ; Oregon pref., 4 to 4 $\frac{1}{2}$ .
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HALIFAX SHARE MARKET.—Jan. 6: The following quotations are from Mr. J. H. Thackeray's list:—Halifax and Huddersfield Union Bank, 30; Halifax Joint Stock Bank, 25%; Halifax Commercial Bank, 25; London and Yorkshire Bank, 28 $\frac{1}{2}$ ; 3d.; John Crossley's, 13 $\frac{1}{2}$ ; Whitworth and Co., 9; Elland Gas, 20; Rastick Gas, 18 $\frac{1}{2}$ ; Bradford Brick and Tile, A, 24; B, 7 $\frac{1}{2}$ ; Charlestown Brick and Tile, 9 $\frac{1}{2}$ ; Ripponden Commercial, 12; Hebden Bridge Cotton, 10; Yorkshire Boiler and Insurance Company, 21s.; Norton Brothers, 8 to 16th.

At Redruth Ticketing, on Thursday, 2262 tons of copper ore were sold, realising 10,634/- 6s. 6d. The particulars of the sale were—Average standard, 110/- 10s.; average produce, 63 $\frac{1}{2}$ ; average price per ton 4f. 14s.; quantity of fine copper, 144 tons 13 cwt. The following are the particulars:—

**Date.** Tons. Standard. Produce. Per ton. Per unit. Ore-copper. Dec. 23... 2619 ... 211 4 0 ... 71 ... 25 4 6 ... 14s. 7d. .... 473 1 0 Jan. 6... 116 10 0 ... 63 $\frac{1}{2}$  ... 4 14 0 ... 14 8 $\frac{1}{2}$  ... 73 10 6

Compared with the last sale, the advance has been in the standard 17, and in the price per ton of ore about 1s. 4d.

Messrs. Henry S. King and Co. are inviting subscriptions at 92 $\frac{1}{2}$  per cent., or 185/- per 200/- bond for 150,000/- (the remainder of the issue of 300,000/- being already allotted) FIRST MORTGAGE SEVEN PER CENT. STERLING BONDS OF THE UTICA, ITHACA, AND ELMIRA RAIL-ROAD COMPANY, bearing interest at the rate of 7 $\frac{1}{2}$  per cent. per annum, payable in London in January and July, which at the price of issue will yield very nearly 8 per cent. on the investment, and it appears that since preparing the prospectus, which will be found in another column of to-day's Journal, Messrs. King have received a cable message from Mr. W. L. Burt, president of the Utica, Ithaca, and Elmira Railroad, which says—"Prospectus coal traffic 25 per cent. below actual present contracts, and local receipts 20 per cent. below what road now earning. Local receipts since opening give daily average \$1100, and coal traffic will yield revenue \$1100 daily addition, so that the gross earnings will have to be placed at a minimum of \$803,000, instead of \$600,000 as stated in prospectus. The enterprise is more fully referred to in another column."

The MONTPELLIER (ISLE OF MAN) SILVER-LEAD MINING COMPANY has been formed, with a capital of 20,000/-, in shares of 12/- each, to purchase and work a sett of the same name, about 500 acres, at the foot of Montpellier Glen, close to the Sulby river. It is stated that the different lodes traversing the sett are to be seen on the surface, and a small trial shaft sunk 10 fathoms on one of them has yielded splendid samples of ore, which contains a large proportion of silver, and commands a good price in the market. The amount to be paid for the property is not stated. Capt. John Woolcock, of the Kirkmichael Mine, reports that on the surface where the trials have been made lead ore is found disseminated throughout the lode sufficient to show its capabilities, and also to warrant a most energetic prosecution of the works. The sett is sufficiently large to permit of mining operations being carried on to any extent, and the facilities for testing the merits of the concern can scarcely be equalled on the island. He has very seldom or never seen a place where adit level driving operations can be so effectively carried on with better chances of success. The mine holds out every promise of success, and he has not the least doubt that if prosecuted to a reasonable depth very satisfactory results will be obtained.

BLUE TENT COMPANY'S AQUEDUCT IN CALIFORNIA—NEW RIVER OF LONDON.—It is generally admitted that Sir Hugh Middleton conferred a lasting benefit on his countrymen when he employed the profits derived from his lead mining adventures in making the New River, thus affording the northern portion of our metropolis an ample supply of water. It has been at all times reckoned as a gigantic undertaking, and many of our readers will be familiar with the sight of the immense body of water continually flowing through the River cityward. The Blue Tent Company have just completed in California a very similar work, their aqueduct being of about the same length as the New River, and large enough to bring some 25,000,000 gallons of water daily to the property, the capacity, therefore, being also similar. The directors of that company may be congratulated on the completion of such an extensive and valuable piece of work. Locally these water-courses are known as "ditches," but in the English acceptance of the word they are rather aqueducts, or canals, looking at the vast quantity of water they convey. The engineering difficulties encountered by Sir Hugh Middleton in his National undertaking were at the time considered enormous, but upon reading the report of Prof. Price we are convinced that they were but child's play compared to the difficulties met with by the Blue Tent Company. Again, Sir Hugh Middleton had, in the supply of water to London, a substantial reason for under-taking such a work. It may be asked why a private company attempted a similar work, but when it is remembered that the company pos-

sesses some 500 acres of ground, containing for a depth of 400 ft. some of the richest auriferous gravel in California, it will be seen at once that they have acted with spirit and wisdom in constructing the aqueduct, and that the shareholders will in the course of a very little time reap a rich reward for the outlay. It seems almost incredible that the aqueduct could be completed in something under a year, yet such is the fact, as stated by the Chairman at the annual meeting lately held. Our comparison would hardly be complete if the cost of the two undertakings were left out of notice, and we believe that on this point also the Blue Tent Company's Californian aqueduct will compare favourably with the New River of London.

NORTH LAXEY.—The north engine-shaft is sunk 6 fms. below the 121 fm. level, and in the south end the lode is 2 ft. wide, composed of soft quartz and lead. This is a most important feature, as will be seen by the report, in another column, being likely to be the commencement of a most valuable discovery. The 110 stopes are worth 1 ton, and the 50 stopes  $\frac{1}{2}$  ton, per fathom.

NEW CHIVERTON.—The shaft is down 11 $\frac{1}{2}$  fms. below the 35; lode worth 20/- per fathom. The 35 north is producing good lead work, and looking likely to improve considerably. The 35 south is improved to 7/- per fathom, and promising to be still better. They have sampled 16 tons of lead ore.

CWM DWYFOR COPPER AND SILVER-LEAD MINES (Carnarvonshire).—We are glad to notice from the agent's report, which appears in our present issue, that operations are being carried on at these mines with considerable vigour. The two lead lodes to which the workings are at present confined appear to be yielding good returns, with every promise of further improvement. We understand that the crushing machinery is expected to be delivered on the mine next week, and that ore will speedily be sent into the market. As the capital of the company is but small (19,000/-), there would appear to be every probability of good dividends being paid very shortly.

GREAT WHEAL VOR.—Under date Jan. 6, Capt. Harris reports—"My inspection to-day is very satisfactory. The lode in the shaft continues to improve in size and value, and from the samples I brought up and have since assayed I think the value of the shaft never much exceeded what it is at present. The rise and winze are progressing, and a little tin in both. With regard to the stamps, I have written to Messrs. Harvey and Co. to say that we are now ready for fixing, and asking them to be sure and deliver all here for us to commence fixing on Monday morning."

BRYN ALYN LEAD MINE (North Wales).—Two new discoveries of ore have been laid open this week at this lead mine on two different lodes, and from present appearances the ore is likely to continue. The discovery in the south lode is not more than 20 yards from surface. The vein is 3 ft. wide, and composed of solid galena and crystallised carbonate of lime. The discovery in the north lode is less than 10 yards from surface; this lode is 3 ft. wide, and composed of pure galena and whitish crystallised carbonate of lime. The mine at all points of operation promises well, and it is expected that ere long it will figure high in the list of dividend-paying mines.

THE PERCY AND KELLY NICKEL MINES OF NEW CALEDONIA.—According to the *Melbourne Age* this company is raising large quantities of nickel ore, and making shipments to Melbourne direct from Noumea, where they receive an advance of from 70/- to 80/- per ton on the raw mineral. We have also been informed that the first direct shipment from Noumea to London was sold on Tuesday last, and realised at the rate of 75/- per ton. Judging from the above particulars the company seems to have acquired very valuable and rich property, and certainly on most advantageous terms to the shareholders. Estimates for the necessary machinery and smelting works will shortly be received.

#### FROM A LONDON BROKER'S CIRCULAR.

The past week has been one of general depression. In the foreign market Egyptians have occupied the chief attention, the stock has fluctuated considerably in price, and shows a fall for the week of from 7 to 8 per cent., heavy sales taking place, owing to the various adverse rumours respecting the adjustment of the finances. Turkish stocks have also had a relapse of 1 to 4 per cent., considerable uneasiness being felt as to the payment of the dividends. Persia, though almost neglected, keep firm. Railways, notwithstanding good traffic returns, do not maintain their prices of last week, and a general decline of 1 to 2 per cent. has taken place, with the exception of London and Brighton stock, which shows an improvement. In the miscellaneous market there is little change. Bank shares are rather better in price. The directors of the Bank of England yesterday, after a rather protracted sitting, advanced the Bank rate to 5 per cent., which, though fully expected, created a general feeling of depression in all the markets. J. Y. WATSON, JUN.

BRITISH LEAD MINES.—Mr. Murchison's pamphlet has been so favourably received that a second edition is already announced for the 15th inst.

PATENTS IN 1875.—During the year ending Dec. 31, 1875, 4561 applications for patents were received. The number in 1874 was 4492, that in 1873, 4294. The steady increase, now continuous for several years, may be taken as to some extent a testimony of our industrial progress. The number now reached is far in excess of any previous year.

The interest warrants for the third half-yearly 10 per cent. guaranteed dividend of the Ynysawdre Coal, Coke, and Brick Company (Limited) were posted to-day.

**LEAD ORES.**  
Date. Mines. Tons. Price per ton. Purchasers. Jan. 3—Rookhope..... 20 ..... £12 11 3 ..... J. Walton and Co. 4—Pennerley..... 80 ..... 15 1 0 ..... Sheldon, Bush, and Co. 6—West Tankerville..... 20 ..... 15 6 0 ..... Walker, Parker, and Co. 7—West Chiverton..... 50 ..... 18 7 6 ..... Burry Port Company. ditto ..... 50 ..... 8 3 6 ..... ditto

**BLEND E.**  
Date. Mines. Tons. Price per ton. Purchasers. Jan. 3—Talgarth..... 200 ..... £5 4 0 ..... Kenrick and Son.

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References: The Presiding Officers of the American Institute of Mining Engineers, and the American Society of Civil Engineers.

WANTED, for the better development of an English Smelting Works in Spain—a regular going concern—a PARTNER, with £2000 at his command. Letters addressed to "R. G., No. 8," MINING JOURNAL, 26, Fleet-street, London.

WANTED, a MINING CAPTAIN, from 28 to 35 years of age, to ERECT COPPER ORE DRESSING MACHINERY, LAY OUT DRESSING FLOORS, and SUPERINTEND DRESSING. Must have had great experience in this department, and

## NOTICES TO CORRESPONDENTS.

SIR.—Can any reader inform me the value of graphite, plumbago, or black-lead per cwt. or by the ton? Also, can anyone tell me if it is marketable, and where; at the same time give me the address of any auctioneer or salesman of ores in London, Liverpool, Bristol, or elsewhere, to whom ores can be consigned for sale.—INQUIRER: Chudleigh.

BRICK MAKING AND SLATE QUARRYING.—Can some correspondent give me the title of the best work published on the subject of Brick Making; also, the best work on Slate Quarrying in Wales.—P. McG.

ARTIFICIAL STALACTITES.—I should esteem it a favour if any correspondent will inform me, through the Journal, the best method of making an artificial stalactite cavern, so that it may be permanent, and not too costly. I wish to know of what the hanging masses should be formed, and how they can be given the glistening appearance which is so much admired.

WELL-SINKING.—Can any correspondent inform me, through the Journal, the probable cost per yard or per fathom of sinking a well of 3 ft. diameter to the depth of 100 fms. through the millstone grit of Yorkshire; and also the shortest time in which such a work could be accomplished.—J. S.: Pinnal.

WIRE TRAMWAYS.—"R. A." (Airolo).—There is no difficulty in using wire tramways under certain conditions—when the line is not too long, and when they are properly and judiciously set up.—"R. A." does not state the distance of the proposed buildings from the point where the stone is to be taken; but here would be no difficulty in constructing it so as to avoid crossing the zigzag road from any point below La Prova to Airolo. The opinion has frequently been expressed in the *Mining Journal* that no single wire should exceed 1½ miles in length; but it is quite easy to provide for the automatic transfer of both full and empty cars at the end of each length, and the fall from the pass towards Airolo would render motive power quite unnecessary. The cost would be merely that of erecting the tramway. As to cost, &c., "R. A." should apply to the company's secretary, and give him details as to the distance the stone is to be carried, and the nature of the ground to be passed over.

MINING KNOWLEDGE.—"D. A." (Barnsley).—Hopton's "Conversations on Mines," which will be forwarded from our office on receipt of 3s. 3d., will most nearly correspond with the description of book you desire.

BLOWPIPE ANALYSIS.—"T. S." (Highgate).—The most complete work on the subject is Cornwall's "Translation of Piatzner," published by Low and Co., Fleet-street, price 1s. 1d. Blanford's "Translation of Scherer," price about 7s., published by Williams and Norgate, Covent Garden, is an excellent little book.

THE IRON INDUSTRIES OF SOUTH WALES.—In next week's Journal we shall publish an important paper on the South Wales Mineral Basin, by Mr. R. Meade, Assistant Keeper of Mining Records, Museum of Practical Geology.

RECEIVERS.—"E. C."—"J. I."—"T. G."—"Mineralogist"—"Reader"—"J. W."—"F. B."—"Shareholder" (Wheat-Grenville)—"Miner" (Retruth): Next week—"Constant Reader"—"U. S."—"Holder of Share" (York) should apply to a broker—"W. M." (Nath)—"Shareholder" (Dublin): The meeting will be held in a week or two, and the proceedings will be reported in the Journal.—"Y. Z."—"Engineer" (Wigan): The subject was referred to in last week's Journal. We shall give some further particulars in a week or two—"Shareholder" (Wheat-Russell)—"Shareholder" (Rio Tinto)—F. J. King (Separation of Minerals): Next week.

THE MINING JOURNAL,  
Railway and Commercial Gazette.

LONDON, JANUARY 8, 1876.

## CO-OPERATIVES AND CAPITALISTS IN THE COAL AND IRON TRADES.

The experience of the North of England Industrial Iron and Coal Company would seem to indicate that the colliers in North Wales were wise in their day when they refused a friendly offer of Mr. WHALLEY, M.P., made upon the occasion of two several strikes, when he tendered his services as mediator. On a late occasion, and now again in the past few weeks, that gentleman has offered to provide the colliers in the Northern Principality with a colliery which they might work upon the co-operative principle, and until they had made a profit of 10 per cent. pay no rent. Upon both occasions alike the men refused to accept the offer. Mr. WHALLEY desired that the men might have an opportunity by their own trading of testing what were their masters' profits; but the men declined to be thus educated. Perhaps they knew how things were going on at the North of England concern. How little success has attended that concern was pointed out in the Journal of last week, though it does not seem that the people who have had it in their hands have been deficient in managerial or practical ability. They appear to have made the best of the property in which they were conjointly interested that the circumstances of the times will permit. For the very purpose of spreading enlightenment amongst the men upon the risks and frequent losses inseparable from the mining and ironmaking industries, we have often desired that more co-operative concerns of this kind existed, for we were sure that the information afforded would be such as should cause the men to entertain a little more respect for those who ran those risks and sustained those losses, whilst it made the wage-earner less dissatisfied with his own position. Whether or not the outcome of the North of England Industrial Company will have this effect may be open to question. Nevertheless, the information will come home to very many, for as we last week showed, several co-operative societies are large shareholders in the undertaking, which has blast-furnaces and rotary puddling furnaces at Carlton, near Stockton, coal mines at East Howes, in the county of Durham, and ironstone mines at Ailsbury, in Cleveland. Not all their operations have been profitless, but what they have gained in one direction they have lost in another, and they are, therefore, unable to declare an interim dividend even upon the preference shares. The directors are, however, hopeful. What directors were not at any time when it has been at all practicable to keep afloat? "They look forward hopefully (they say) to a revival of trade in the spring, which will essentially improve the position of the company, and justify a resumption of work under favourable conditions at Carlton forge, in conjunction with the new plate-mills."

Nothing but good, as well to wage-earners as to wage-payers, should result from the operations of this concern. If the results of the trading should be to convince the numerous co-operative societies who have put money into it that they might easily lose in industrial co-operation of this class money which they have gained by the keeping of co-operative stores wherein they spend the money which has come to them as wages, much loss and suffering will have been avoided. But a greater benefit than that should come about.

The current profitless operations of the North of England Industrial Iron and Coal Company should convince the wage-earner that "the capitalist is a pure boor to every community, never a good, and that on the greatest scale." Not so, however, it is pointed out, "argues the workman. He, on the contrary, meets this with a flat contradiction. The capitalist (says he) is our natural and necessary enemy. He may be personally a good sort of man, he may have risen from the ranks of workers, he may by birth and connection sympathise with us, but his position is antagonistic; our foe he must be, our master he will be if he can, and we have nothing to do but either dispense with him altogether, where that is possible, or fight against him by combination as best we may." Against all this prejudice, error, and confusion employers (Mr. F. W. NEWMAN has written) can hope to prevail by reasoning, and whoever takes a contrary side in the argument is generally set down in the workman's mind as one who has his own reasons for upholding the tyranny of competition; and that, moreover, the sanction of some educated gentlemen confirms the workman in these convictions. It is hard, Mr. NEWMAN says, to get the opposite argument listened to in the right quarter. All this was before the public before the report of the company of which we are writing came out. But if it is difficult by argument, and by the promulgation of facts which are patent enough to people whose education has not been biased by class prejudices to convince of the truth, then we may hope for better results from circumstances which appeal so directly to a man's personal interest as that of loss of savings.

There can be no disputing Mr. NEWMAN's position that "capitalist traders are the true leaders and organisers of national industry. Without them trade is extremely languid, industry has very small rewards and no investments. Without them population may, indeed, become dense if the land be carved into small freeholds, but its in-

dustry is then confined to those primary forms which the first necessities of life suggest. Without capitalists to invent, resolve, risk, guide, superintend, control, and supply materials and food for workmen, we shall have no masses of organised industry, no iron or copper mines, no coal mines, no huge ships, no distant foreign trade, no vast workshops, no elaborate roads, but mere wretched tracks." How mistaken, therefore, are those leaders of the masses who would teach that these same capitalists are the natural and necessary enemies of the masses. With equal force and plainness the *Times*, descanting upon the report of the Co-operative Association which we have been discussing, says that "the barrenness of the present time may suggest to the working men that the position of a wage-earning labourer has its advantages as well as its disadvantages. If the workman for a weekly wage has no means of exacting with precision a share in the profits rising with the improvement of trade, he is protected, except in extreme cases, against the risks of loss by the stagnation of trade. He has a certainty of the same employment on the same terms so long as business can be carried on at all. His employers accept all the hazards, and expect to be proportionately remunerated. The working man in an industrial undertaking is very nearly in the same position as a debenture-holder in a company, his wages are the first charge, and their rate is fixed, except by a variation of the contract mutually agreed upon. The risks fall upon the ordinary shareholders—that is, upon the capitalist employers. It is not reasonable that the debenture-holder while retaining the security of his 4 or 5 per cent. should claim to participate in the gains of the ordinary shareholders in the profitable years, and should repudiate responsibility for losses in the unprofitable years."

## COLLIERY ACCIDENTS, AND PERMANENT FUNDS.

The views we have frequently enunciated with respect to the money at present in hand from funds raised for the relief of the widows and children of the men killed by colliery explosions are finding an echo where least expected. It appears that the public is tired of subscribing after a colliery accident on an extensive scale has occurred, not because sympathy or charity are in any way paralysed, but simply because it has been made acquainted with the fact that there is sufficient money in hand to more than provide for all the women and children that have recently lost their husbands and fathers by the explosion at Swithland Main. On Tuesday evening a conference on the subject was held in Barnsley, under the presidency of the Mayor, and there was present the provision at committee appointed in connection with the Swithland disaster, as well as representatives of the Oaks Committee formed in 1866, and who will have a surplus estimated at from 15,000*l.* to 20,000*l.* The matter discussed was the advisability of establishing a permanent fund. Allusion was made to the probable balance from the Oaks Fund in 1866, as well as to something that remained from previous ones raised in 1847 for the sufferers by an explosion at the same place. There was also said to be the sum of 2,280*l.* invested, being the amount of the surplus of the Hartley Fund appertaining to Yorkshire, whilst a letter was read from the Lord Mayor of London asking for definite information as to what claims we were likely to be made on the proposed fund from the sufferers by the Swithland explosion. We may remark that whilst writing, meetings, and conference are taking place there is considerable suffering on the part of those who from no cause of their own have been the means of causing it all. Mr. HARVEY, one of the committee of the Oaks Fund, made the somewhat singular declaration that it was the duty of the colliery owners to subscribe most liberally before the public were applied to, and expressed an opinion that the public would stand aloof until they did so. He then referred to the appeal made for aid from the Oaks Fund from the secretary of the Morley Main Colliery Explosion Fund for assistance, attention to which was drawn by us at the time—and the refusal. The latter appears to have been based on a circular issued at the time the fund was being formed, and which stated that the subscriptions would be held sacred for the relief of the sufferers by the Oaks disaster, and that any surplus which might be left would not be given up until every claim was satisfied. Now, we are not aware of any duty resting upon the colliery owners as a duty to subscribe very liberally towards the sufferers by the Swithland explosion, and we, in fact, could give some very good reasons why they should not. On the occasion of the Oaks explosion the colliery owners subscribed most liberally, so that a large sum of money given by them is now held by Messrs. HARVEY and the two or three other gentlemen who have the fund under their special protection. Indeed, the only wonder we have is that the conduct of those parties should have been so long tolerated by the large subscribers. True, no doubt, a circular was issued, but surely that is a most flimsy argument for refusing to give up a portion of a very large sum of money, which under no circumstances can ever be required for the object for which it was subscribed.

It would seem that it is intended to keep the money as long as the present managers can do so. But as it is not unlikely that the great body of the subscribers will be applied to, we shall look with no little interest to the course that will then be pursued by those who have shown so little sympathy with the widows and fatherless. Mr. W. STANHOPE, M.P., took the same view of the matter as we did last week, for he said if no part of the fund could be made available for the sufferers by the Swithland Main explosion, an actuary could be called in, and he would be able to estimate the amount required to meet all claims, and the Oaks Committee might then see its way clear to grant a certain sum for the purpose of founding a permanent fund. This appears to be an easy way of getting out of a difficulty if there really is one, but we certainly do not see any reason whatever, notwithstanding the statement of the treasurer, that the interest on the invested money did not pay the claims. We should think that nobody ever dreamt that such would be the case, for parties would not subscribe 40,000*l.* or more, so that the interest only should be paid away, and the capital itself invested in the names of a few gentlemen entirely unknown to the great bulk of those who sympathised deeply with the unfortunate sufferers. The trustees, however, have not shown the slightest sympathy for the poor widows and children of those who lost their husbands and fathers in consequence of other colliery explosions, and we certainly have not the slightest confidence in them, but hope they will be obliged to act entirely different to what they have done.

## MONEY AND IRON.

The iron trade naturally follows very much the varying phases of the money market, and reflects their influences. One of these current phases is the financial collapse of rotten republics and decaying despots, and the growth and strength of progressive colonies. There seems little chance of our doing a very extensive business in rails this year with Turkey, or even with Egypt; but the case is quite different when we come to deal with our colonies. In these young but vigorous communities there is, happily, a large measure of hope and energy; and the human race, decaying apparently in some ancient countries, is there renewing itself with all the fire and vitality of youth. In South Australia, for instance, the public revenue has increased in five years from 700,000*l.* per annum to 1,000,000*l.* per annum, and a more or less marked progress has been observed in well nigh every other member of the flourishing Antipodean group of settlements, poor convict-tainted Western Australia, perhaps, excepted. The result has been the remarkable growth in the exports of our railway iron to the Australias, to which we have more than once called attention. In the eleven months ending Nov. 30, 1873, we sent the Australian settlements 27,788 tons of rails and accessories; in the corresponding eleven months of 1874, the corresponding exports rose to 80,839 tons; and in the corresponding eleven months of last year they still stood at 74,765 tons, although the shipments have presented, perhaps, rather less activity of late. There is one circumstance which appears to us to tell strongly in favour of the existing state of affairs, as contrasted with that which prevailed three or four years since. In 1872 we were beginning to make consignments of rails to American railroad companies of very doubtful credit, most of which came altogether to grief in the great panic of September and October, 1873. We do not suppose that

very serious losses were sustained by British ironmasters by their transactions of 1872, but they were clearly of a risky character, and, therefore, their enforced cessation was by no means unmixed evil. The character of the colonies—or at any rate, of most of them—with which we seem now to have a chance of doing a considerable rail business is of an altogether different character. Nothing can be more stable, or more well assured, or more respectable than the Government of the Cape Colony, or the Government of the steadily advancing Australian settlements. The credit of these Governments is so strong that their paper is as good as their money, and it would not be any hardship to an English ironmaster or an English iron company to receive payment in whole or in part in debentures of such bodies. We think these are considerations which ought not to be overlooked. As a well-established colonial Government cannot be otherwise than an excellent paymaster, an English ironmaster could afford to work for it at a moderate profit; and it seems probable that this point will be borne in mind, and that every effort will be made to do business upon the (at any rate, in some cases) sound principle of small profits and quick returns.

It is clear that if we mind what we are about, our colonies may for some years to come prove excellent customers for our iron. If colonies' population is scarce, and capital is scarce also, and these are conditions which must check for a lengthened period the development of colonial metallurgy upon an important scale. Here and there we see attempts made to turn the iron wealth of the Australian colonies to good account. Such efforts will, doubtless, prove successful some day, when the Australians have more inhabitants and a larger store of accumulated wealth, but at present it can scarcely be said that Australian metallurgy exhibits much vitality. On the other hand, the Australian colonies and New Zealand stand in urgent need of railway communication—in more need, indeed, than many countries of the Old World, since they are not so well supplied with ordinary roads and navigable rivers. We trust, however, that our ironmasters will not endeavour to enforce an exacting policy in dealing with Australian clients, but that they will act upon the principle that, after all, a nimble ninepence is infinitely better than a slow shilling. Certainly, the British iron trade has for many a long month had enough of slow shillings.

## THE COPPER TRADE.

During the quarter ending Dec. 31 the quantity of copper ore, the produce of Cornwall and Devonshire, sold at the Cornish Ticketing, was 13,431 tons, which contained 917 tons 14 cwt. fine copper, and realised 67,832*l.* 10s. 6d., being equal to an average of 51*l.* 1s. per ton of ore, and 73*l.* 18*s.* per ton of copper in the ore. During the same period the British, colonial, and foreign ores sold at Swansea amounted to 69,909 tons, which contained 1145 tons of fine copper, and realised 93,826*l.* 8*s.* 6*d.*, being equal to an average of 12*l.* 8*s.* per ton of ore, and 81*l.* 19*s.* per ton of copper in the ore. The average produce of the ore sold at the Cornwall Ticketing was 6*l.* per cent., whilst that sold at Swansea gave an average produce of 15 per cent. From this it will be seen that the aggregate sales by ticket were 20,340 tons of ore, containing 2062 tons 14 cwt. of fine copper, and realising 161,658*l.* 19*s.* The subjoined is a summary of the periodical sales at the Cornwall and Swansea Ticketings respectively. The ore sold at the Cornwall Ticketing were—

Date.	Standard. Prod.	Price.	Per unit.	Tons.	Fine cop.	Amount.
Oct. 7.	£115 11 0	6 <i>l.</i> 4 <i>s.</i>	£5 0	6	14s. 9 <i>s.</i>	1480 ... £7,440 16 <i>s.</i>
21.	115 1 0	6 <i>l.</i> 5 <i>s.</i>	5 2 6.	15 0	2225 ... 152 4.	11,398 58
Nov. 4.	113 12 0	7	5 4 6.	14 10	2201 ... 154 8.	11,483 11
18.	118 1 0	6 <i>l.</i> 4 <i>s.</i>	4 17 0.	14 10	3643 ... 235 18.	17,707 78
Dec. 2.	112 12 0	6 <i>l.</i> 4 <i>s.</i>	4 16 6.	14 0	1236 ... 83 5.	5,975 88
23.	111 9 0	7 <i>l.</i> 4 <i>s.</i>	5 4 6.	14 6	2646 ... 180 7.	13,829 58
Total for the quarter						
				13,431	917 14	£67,832 10 <i>s.</i>
Quarter ending Sept., 1875						
				13,952	953 10	72,618 11
Quarter ending June, 1875						
				11,717	821 17.	60,317 21
Quarter ending March, 1875						
				10,960	748 12.	53,953 18
Total for the year 1875						
				80,550	3412 2.	£22,547,721 61
Showing a quarterly average of						
				12,512	860 10.	63,850 11
Corresponding quarter Dec., 1874						
				12,959	917 17.	67,998 19
Total for the year 1874						
				50,237	3623 18.	235,459 11

The ores sold at the Swansea Ticketings were—

Date.	Standard. Prod.	Price.	Per unit.	Tons.	Fine cop.	Amount.
Oct. 24.	£104 6 3 14 7-16.	£11 17	4	16s. 5d.	1806	260 15c.
Nov. 9.	104 7 6	23 <i>s.</i>	19 6 0.	16 8	1159	272 7.
23.	104 1 3					

discoveries, among which may be named that of the Chanda coal field and enormous masses of hematite iron ore in the central provinces, besides deposits of silver-lead, and very large quantities of stream tin in British Burma; highly interesting and graphic descriptions of these and many others, with valuable and important reports on the already existing collieries being contained in the records. It will interest many to add that after proving the Chanda coal field by boring, he sank a shaft, encountering in it a sharp quicksand, and fitted it with guides, cage, &c., with openings on the vein in readiness to work the coal, which was examined by the late Lord Mayo (then Viceroy), who accompanied Mr. Fryer down the shaft to the coal face, and extracted a piece of it with a pick presented him before descending, and which had been made of the iron obtained from the ore (Mr. Fryer) had discovered in the district. He was well known as an able lecturer and contributor to the mining institutes and papers, and his general manly bearing raised him in the universal esteem of a large circle of friends. The name of Mr. Mark Fryer will be long remembered, and we can scarcely refrain from expressing regret that so young and bright a career should have been so soon cut short by the insidious climatic influences of the East.

## REPORT FROM CORNWALL.

Jan. 6.—In the absence of any special news of interest for the current week, our report can hardly be better occupied than by giving some additional details of the course of mining events for the past year so far as the different districts are concerned.

The St. Just district has, as already stated, suffered very materially by the stoppage of St. Just Amalgamated, which at one time employed about 300 persons. Moreover, there was not a single dividend declared in the district for the year. The general prospects of the larger mines have, however, much improved during the last few months, and, including Ding Dong, over 1500 persons are now employed. Wheal Owles has opened up in West Wheal Owles quite a new mine under the sea, where a very rich tin lode has been discovered, worth in parts 100/- per fathom. The tin in stock at Wheal Owles is worth at present prices—estimates of its quantity vary—from 15,000/- to 20,000/. On such a quantity as this a rise of 10/- or 15/- would pay. Wheal Owles employs about 250 persons, and has six steam engines working. The last account showed a surplus profit on four months of about 1000/. Botallack has improved its position. Wheal Cock has opened out well, and the new portion of the mine east has been turning up some splendid tin ground; there is a very extended field for new discovery. The monthly returns of tin and copper are leaving a fair profit; there are now employed about 400 persons. Levant Mine, which runs out under the Atlantic a third of a mile, and is 230 fms. deep, is doing much better, and somewhere about meeting the costs; nearly 22,000/- has been called up here. The north lode at the 130 is opening up well, likewise a new copper lode very recently discovered at the 85; about 220 persons are now employed. North Levant making profit, looking very well. There are several points of discovery looking very encouraging. About 170 persons are employed. Upwards of 150 tons of best tin were returned last year. Speare Moor managers have opened up a new part lying on the south, which offers special chances for success on the Botallack lodes. This mine sold during the past year about 77 tons of best tin. Wheal Cunningham and Great Trevegean are both working on an easy scale of cost, and discoveries are anticipated.

The chief event in the St. Ives district is the suspension—noted last week—of the St. Ives Consols, which employed nearly 400 hands, and had returned 130,000/- in dividends. The *Western Morning News* in its mining summary, to which we are indebted for some interesting particulars, says that it is likely that a new company may be formed. At Rosehill Hill, too, the adjoining sett west, the old mine has been abandoned, and operations are now chiefly directed towards the north of the sett. Early in the year Wheal Mary, Wheal Margaret, and Wheal Kitty (Levant) are flooded to the 80, and considerable controversy arose between the parties interested. This was at last settled by an amalgamation, and the three mines are now being worked as Wheal Sisters. The water is now down to the 120, but the richest ground is still under water. These mines have raised something like 1,000,000/- worth of tin, and declared very handsome dividends. Providence Mines have successfully passed through their hour of trial, and employ about 220 persons, nearly as many as Wheal Sisters. During the year about 150 tons of tin have been sold, and at an average price of 48/- 10s. per ton. No call has been made during the year, and that the returns about meet the expenditure. The Trecrom Mine, adjoining Wheal Mary, is said to offer good prospects; also the Durlo, which is an extensive sett, always very productive for tin. No dividend has been declared from Lelant or Trednack for the past twelve months, but present prospects are considered more hopeful. Twenty engines are now at work in the district, and nearly 900 persons are employed.

The Hayle and Marazion districts, though there have been some attempts at revival, present practically the same depressed state. Mining here is far more a matter of history than present fact.

Mining is at a low ebb in the Helston district, in comparison with the state of things three years since, when a busy population was profitably employed at high wages. Many of the smaller adventures have succumbed long since, and Great Wheal Vor has materially reduced its labour cost by limiting the working. Great Work has been "knocked," after decades of regular dividends. The value of cottage property in the parishes of Breage and Germoe has seriously depreciated.

In Wendron, Trumpet Consols still works, and is as productive as ever, but the tin discoveries in the Australian colonies have more than taken away shareholders' profits, and instead of dividends calls have followed; a little improvement of the tin standards would again make this mine at least self-supporting. East Lovell, which did such wonders with tin over 90/- per ton, still holds its own. Ballymheen, in Wendron, is in an exceptional state, as large deposits of tin have been laid open, and considerable returns are being made. The directors declared a dividend of 10 per cent. The prospects of the mine were looking bright when the manager made the announcement that the mine had partially collapsed, and was rapidly filling with water. The cause was that the adit level had been choked for several months, and that when the heavy rainfall in November found its way down the mine there was no outfall beyond that of the pumping engine. The agents were dismissed, and others put into their places, and the operations are to be resumed at once.

There has been little outward change in the great mining district which centres around Redruth and Camborne and the outlying locality of St. Agnes. There have been several stoppages, though none at all approaching the importance of St. Just Amalgamated and St. Ives Consols. But unless matters greatly improve 1876 will have a different tale to tell. The present tin standards are the lowest for some years, and the majority of tin mines cannot pay costs at this price. Dolcoath, Tincroft, and three or four others could pay their way with tin at 40/- per ton; East Pool at even less than this. But such largely productive mines as Carn Brea, Cook's Kitchen, West Bassett, West Frances, and Pedn-an-dre are barely able to meet their costs at present prices, and unless better are obtained in 1876 more will cease working. Several mines gave way last year, including Wheal Buller, Florence, Parbola, South Dolcoath, and Polbore, although not so many as were shut up in 1874. The prospects of West Poldice, however, have caused the market value to increase enormously. Wheal Coates in St. Agnes, is now more than paying costs. Wheal Unity Wood, Wheal Peevor, Killifreth, and St. Agnes Consols are all progressing very favourably.

Copper mines have held their own better during the year than tin mines, the price of copper being remunerative, and several new mines are being taken up with a view to their being worked. We t Seton has made profits of over 200,000/-; and, although in the early part of the year, from an influx of water from the neighbouring mines, the mine suffered heavily, yet now that their additional pumping machinery is at work, and the water mastered, they are able to come to ticketing with very good quality ores, and in pretty large quantities. The recent discoveries in the western ground are very important. At Wheal Bassett there is also a new discovery of copper reported. This mine has already made profits of over 350,000/-, and the present discovery is watched with great interest. West Tolpuddle pays regular dividends, and may be looked on as a permanent mine.

The chief feature of the Chiverton district is, of course, the resumption of dividends by West Chiverton. Some other lead mines, newer ventures, are well spoken of.

The central district, and the country around St. Austell and Par, hardly call for comment. Where mining still exists here it is a

mere shadow of its former self. Still it cannot be said that 1875 made matters worse; and in some respects the prospects of 1876 are more hopeful. Tregarder Mine, near La Istow, is being re-worked for silver-lead.

The Li-keard district has in no wise retrograded during the year. South Caradon has within the past 12 months had a large marketable rise; shares which might have been purchased in the latter part of 1874 for about 45/- or 50/- each are now trebled in value. This may be attributed to the improved productiveness of the various lodes, and to the present company having taken over West Caradon sett, which is believed to be very valuable. Only a narrow boundary previously separated the two sets. Shares seldom change hands, and those who have year after year placed confidence in the mine have received large returns from their capital invested. The output of ore in Marke Valley has been largely augmented. At the next meeting it is believed the accounts will show a sufficient profit to declare a substantial dividend. With regard to East Caradon, many mining men believe that the old palmy days will again return to this mine. For some time the returns have been sufficient to defray the expenditure. Glasgow Caradon is a rich and valuable mine, and is returning a large quantity of mineral at a good profit. During the year important improvements have taken place. With a better price for tin Phoenix and West Phoenix would be again in a state of property. In order to contend with the depressed state of the tin market every economy has to be exercised. Herodsfoot, almost the only lead mine in the neighbourhood, still manages to pay its way, and shows trifling profit each quarter. This mine has in days gone by been very profitable. Wheal Mary Ann has been abandoned. The adjoining mine—Trelawny—it is supposed, would have continued working for many years longer had not the lord declined granting a sett of the adjoining land, which was known to be very rich. This was a great blow to the industry of that district. Other mines in the same range have all been abandoned within the last few years—Trewreath, North Trelawny, Lu Leott, and Whal Wrey. In the early part of the year it was anticipated by many that the three mines last named would be resuscitated. Hitherto that hope has not been realised.

Mining in the district of which Gunnislake is the centre, embracing Callington on the one side and Tavistock on the other, has not for many years looked so healthy as during 1875. A very important feature in most of the mines is the immense quantity of mudlic, which has been turned to good account by the production of arsenic, and this has very materially increased the returns of so many a balance-sheet. Of all the mines in the district there have only been about one or two calls during the year, and there have been some dividends. Other mines might have declared dividends, but the shareholders have wisely decided on not adopting a hand-to-mouth policy, and have preserved their balance in hand to meet future contingencies, or to equalise dividends should they enter that happy state. Hingston Down and Gunnislake (Clitters) have resumed paying dividends, and every probability consists of a continuation. Bedford United Mine and Wheal Russell have again become profitable concerns, and are likely to enter the Dividend List. Drake Walls employs a great number of the population, and returns a large quantity of tin. The resuscitated mines are The Queen, Okel Tor, and Tavy Consols. The Eminens United Mines, comprising Holmhill, Kelly Bray, and Reimoor, which contain vast quantities of arsenic, have been worked with greater activity during the last eighteen months than for many years past, and together with the Wheal Newton, at Harrowbarrow, are now carried on with vigorous operations by the West of England Fire-clay, Bitumen, and Chemical Company (Limited). The New Consols Mine is well reported of, though ores of arsenical pyrites, tin, copper, and silver, all blended together in the same stone, have been a source of annoyance for many years, but now that efficient means have been applied to separate them the difficulties attending the working of the mine at a profit have been got over.

Devon Great Consols, too, is looking better, and the general cheering prospects have led to enquiries after new mines, and in some cases sets have been granted with the object of reworking abandoned concerns. Recent discoveries at a considerable depth from surface have led to the firm conviction that it is no use playing at mining; those who would win mineral wealth "must plough deep."

Mining in Devonshire generally does not call for much comment. The Brixham district has been very dull. On the north of Dartmoor there is some activity, and Great Wheal Eleanor is spoken of as likely to revive tin mining in that locality. Chilcoton and Hogs Tor are as productive as ever of manganese. The Exmoor district is developing but slowly, though the Bampfylde Mine is spiritedly pioneering the way. It is hoped however, that the undoubtedly great mineral wealth of this district will be speedily utilised. The Comb Martin Lead Mines have made a fresh start.

## REPORT FROM NORTH AND SOUTH STAFFORDSHIRE.

Jan. 6.—The advance of 2s. per ton in the price of South Staffordshire coal upon which it appears that the leading coalowners in the district have determined, will raise the standard of furnace coal to 15s. per ton. It remains, of course, to be seen how far this as a standard can be maintained; but the effects of such a movement on the iron trade will be simply disastrous. The justification of the coalowners is that the demand is so great for best coal particularly, that it is only met with difficulty, and also that the miners are strongly urging their demands for higher wages. It is somewhat singular, that with the iron trade of the district so depressed, the coal trade should be so active; but the explanation is found in the circumstance that very large supplies of fuel are being sent by railway and canal to outlying districts.—[A telegram from Birmingham, yesterday, informs us that the coalmasters have decided to defer for the present the intended advance in coal.]

The South Staffordshire Iron Trade is this week in a state of suspense, pending the result of the quarterly meeting in Birmingham next Thursday. The only movement in prices at present announced is a reduction of 2/- per ton in Baldwin's (Widnes) best charcoal sheets; but this is quite an exceptional change, and has no bearing or significance as to the general course of prices for finished iron. For the moment the tendency of prices, both for pig and finished iron, is decidedly upward.

On Wednesday, at Wolverhampton, at a meeting of the South Staffordshire Mines Drainage Commissioners, the seventh report of the arbitrators on the drainage of the Tipton district was approved, an agreement for subsidising the Horseley and Tipton Green engines was ratified, and the seal of the Commissioners was affixed to the Baggaley Mill in the Kingswinford district and the Bentley Mill in the Bilston district.

The following were included in to-day's quotations on the Birmingham Stock Exchange:—Sandwell Colliery, 39; Hamstead Colliery, 1½ prem.; Cannock and Huntington Colliery, 2½ prem.; Chilcoton Iron, 5; Pealsall Coal and Iron, 5 dis.; John Bagnall and Sons, 5½; Patent Shaft and Axle Company, 5 prem. The market for iron companies' shares is depressed, but colliery shares are looking up.

The first annual dinner of the North Staffordshire Exchange was held at Stoke, on Wednesday, Mr. R. Heath, M.P., presiding. In the course of the proceedings it was stated that the Exchange already numbered 153 members, representing 80 of the leading firms of the district.

**TERrible Colliery Explosion.**—On Wednesday the village of Talke was again thrown into a state of consternation by another terrible colliery accident. This time the scene of the disaster is a little removed from the old spot, the property of the representatives of the late John Wedgwood, called the Gammage Pits, lying in the valley near Red Street and Chelton. Five human beings were suddenly launched into eternity, out of the 15 at the time. In the pit. There are 101 men employed at the colliery, which is quite a new one, coal having been found about 12 months ago. At the time of the accident the five men killed were working in the 7 ft. seam, the remainder working in the 8 ft. seam. Suddenly an explosion took place, which completely devastated the 7 ft. seam, and killed the men at work there. Fortunately, those working in the 8 ft. seam were all got out safe. One horse was killed. The cage hanging at the mouth of the pit was blown over the headstocks and dashed to pieces, as were also the plates covering the pit's mouth. During the day 86 men had been at work, but fortunately they were divided into turns, or the loss would have been more terrible still. The bottom of the shaft was smashed in, and a breach made right to the furnace. An exploring party of 14 descended about seven o'clock, and soon recovered the dead bodies of

the five men. They describe the destruction of property as fearful. The cause of the explosion is supposed to be a shot fired against the instructions of the firemen, Wm. Sharple, who was in the 8 ft. at the time of the accident. The pits are the property of the same proprietor as those where the ill-fated accident took place at Bignall Hill, Audley, on Christmas, 1874, and the seams are worked as at the latter place and at Talke. Strict systems of supplying the men with Davy lamps were carried out at the pits, and shots were not allowed to be fired only under instruction from the firemen, if at all.

## NORTH STAFFORDSHIRE MINING INSTITUTE.

A meeting of members was held at Stoke on Monday, when Mr. T. S. Wilkinson, one of the Vice-Presidents, presided. Mr. J. Potts, Tunstall; Mr. T. D. Wardle, Keynsham, Bristol; and Mr. J. Creese, Birmingham, were elected members of the institute.—Mr. R. A. Marshall, of Leicester, read paper on "Shepherd's Patent Sectional Boiler." By the aid of diagrams he gave a long description of this boiler, which, he said, was fully on a par as to evaporative economy with most boilers at present in use, and was the best type of boiler as regarded circulation of steam and water. Its main advantage was, however, that it would work with safety up to a pressure of 150 lbs. to the square inch.—Questions were put by the Chairman, Mr. Higginbottom, Mr. J. Lucas, and Mr. J. Ashworth; and, in reply, Mr. Marshall said the sectional boiler cost about as much per horse-power as the Galloway boiler. It was decided to have the paper printed, and a vote of thanks was accorded to Mr. Marshall for reading it.—Mr. J. Ashworth, of Burslem, read paper on "Gunpowder," tracing its origin and history, and describing the ingredients composing it, promising that at a future meeting he would continue the paper, and treat of its manufacture and the resultant gases after an explosion.—On the motion of Mr. J. R. Haines, secretary, seconded by Mr. Stuck, a vote of thanks was tendered to Mr. Ashworth for his paper.—After the meeting, Mr. G. G. Andre, F.G.S., London, delivered an interesting lecture on "The Cleavage Planes of Coal, Relative to the Economical Getting of Coal."

## SANDWELL PARK COLLIERY.

The following report has been addressed to the shareholders:—

SIR.—I beg to inform you that since the shareholders' meeting held on Nov. 3 last, the north gate-road has been driven into the Park a distance of 81 yards, making a distance of 150 yards into the second "take" of 170 yards, and a total distance from the pit bottom, "as the crow flies," of 8½ yards; and at that point I have put another bore hole up through the seam, and find it measures 8 yards 1 ft. 2 in. thick, of good fair quality, with no indication whatever of any fault, and has a most encouraging appearance still in that direction.

The gas road is ventilated by what is known as "pipe air" from the surface, and having now been driven a greater distance in a thicker coal than has ever been previously attempted with a single shaft in South Staffordshire, by such or, indeed, by any other means, and your directors having expressed themselves highly satisfied with the result, have suggested that the further driving of it should be suspended for a few months until the other shaft is sunk down.

Having regard to the fact that it has been driven so far in miden coal without risk, I have accordingly suspended the driving in that direction until the other shaft is sunk down, and so utilise the labour in preparing the second pit bottom for business.

My directors have thought it desirable I should thus fully report to you in order that you may know the real reason for their deciding to stop the further driving of the gate road for the present.

Since the suspension of the gate-road, Mr. J. P. Baker, the Government Inspector of Mines for this district, has intimated to the directors that if it had not been stopped, he should have suggested such a course as: an 11th, at the same time, resuming his pleasure at 150 yards from the pit bottom, without risk, I have accordingly suspended the driving in that direction until the other shaft is sunk down, and so utilise the labour in preparing the second pit bottom for business.

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As yet little can be said with respect to the Sheffield trades, for ten days or a fortnight's holiday are not unusual to many of the workmen in the town. There is, however, some prospect that the present year will be much more favourable than the last one; so far, appearances favour that view with respect to several branches. In South Yorkshire the coal trade is much as it has been, but there are strikes at two or three places. At the Edmund's Main, which is connected with the Swaithe Main, the men have been on strike since the explosion at the latter, and refuse to work with powder. The question in dispute is as to the price to be paid for wedging. The men appear to consider they ought to realise as much money by that mode as by gunpowder. On Wednesday, a meeting of some of the masters with regard to the matter was held at Sheffield; but it is a question that does not directly interest the entire body of colliery owners, seeing that at many places the use of gunpowder has long been unknown.

## REPORT FROM DERBYSHIRE AND YORKSHIRE.

Jan. 6. The men at many places in Derbyshire have not yet got fairly settled down to work for the new year, so that is by no means easy to say what is exactly the condition of trade. It may, however, be fairly assumed that ironworks generally will have opened the year 1876 somewhat favourably as compared with other parts of the country. The foundries appear to be in a healthy state as to the Bessemer steel works. A better demand for house coal usually springs up after the holidays, and this has been the case recently. Rather more is being done with London over the Midland, the rates to which will be advanced 6/- per ton after the 10th inst. The Great Northern and the London and North-Western also advance the rates to the same amount. The lead miners appear to be working steadily, for unlike the colliers, their wages are very small, so that they cannot afford so many days play.

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## THE SCOTCH MINING SHARE MARKET—WEEKLY REPORT AND LIST OF PRICES.

During the past week the market, though still quiet, has been very firm and prices tend upwards. In shares of iron and coal concerns, beyond a trifling reduction or Omon and Cleland, prices are all better. The principal improvements are—3/- on Bolckow, Vaughan A shares, and 2/- on Loco and Capel-drae. Bolckow, Vaughan B shares have likewise advanced to 45/-, 46/-; Cardiff and Swansea, 2½ (cum. div.), buyers; and West Cumberland Iron and Steel, 14½ sellers. Foreign copper concerns are little altered, beyond a rise of 4/- on Panulillo. Tharsis shares very firm. In home undertakings prices are—Glasgow Cardon unaltered, at 13½, but new shares higher, at 24s.; Gunnislake (Clitters), 35/-; New Pembroke, 5½ sellers; Plymbridge Lead, ½ buyers. In shares of gold and silver mines—Richmond, ½ lower; Australasian Mines, ½ to ½; Exchequer, ½ to ½; Frontino and Bolivia, 26s. to 30s. 6d.; I X L, 3; Javali, ½ to ½; Pestarena United, ½ sellers; South America, 7s. to 9s.; and Teoma, ½ buyers. Oil shares unaltered. The upward movement continues in the miscellaneous department, and those which are, and continue to be, managed efficiently appear likely to increase in favour. London and Glasgow Engineering, &c., is ½, and Scottish Phosphate, 36—both higher per share. British Agricultural, 1½ to 2½; and Phosphate Guano, 2. The Bank rate of discount has to-day been raised 1 per cent.—per cent. from 4 per cent. at which, it will be remembered, it was fixed only last Thursday. A detailed list of the several days' business follows:—

On THURSDAY last the market was quiet. Armiton, 7 to 7½. Benhar, 11½ to 11¾; new shares done at 6½ and 6¾, closing at these prices. Frontino and Bolivia, 35s., buyers. Glasgow Cardon done at 35s., 6d. to 35s. 6d.; closing 35s. to 35s. 6d. Bolckow Vaughan, 32s. 6d. to 33s. 6d. Loco and Capel-drae done at 51s. Marbella done at 7s., closing 7s. to 8s. Monkland done at 50s. 6d., closing 50s. to 51s. Omon and Cleland done at 55s. and 55s., closing 54s. to 55s. Prince of Wales, 41s. 6d. buyers. Richmond done at 7½ and 7½, closing 7½ to 7½. Tharsis, 13½ to 22; new share 14½ to 14½. West Cumberland Steel and Iron, 14½, sellers. Young's Paraffin, done at 10s. to 8s. and 7½, 16½, closing 7½ to 8s. Scottish Wagon done at 10½.

On FRIDAY the market was again quiet. Armiton, 7 to 7½. Benhar, 11½ to 11¾; new shares, 6½ to 6¾. Bol

looking well." South Aurora, 6s., buyers. Tecoma, 1/2, buyers. Tharsis done a 21/4 and 21/2, closing at these prices; new shares done at 14/4, closing 14 to 14 1/2. Young's Paraffin done at 8 and 7 1/2 16ths, closing 7 1/2 to 8. Scottish Wagon, 10/2 to 10 1/2 16ths.

On WEDNESDAY a little more business was done. Bonhar, 11/2 to 11 1/2; new shares, 6 1/2 to 6 1/2. Bolckow Vaughan, A, done at 50 1/2. Eberhardt and Aurora, firm, at 9 to 9 1/2. Exchequer, 5 to 7 1/2. Frontino and Bolivia, 36s. to 38s. 6d. Glasgow Caradon, 32s. to 36s.; new shares, 23s. to 24s. Glasgow Port Washington, 8 1/2. 6d. to 82s. 6d.; prepaid, also 81s. 6d. to 82s. 6d. Gunnislake (Clitters), 3 1/2, buyers. Killifreth, 3 1/2, sellers. Lehigh and Wilkes Barre, 8 per cent. bonds, 93, buyers. Loochore and Capledrae done at 7 1/2. London and Glasgow Engineering, &c., higher, at 31 1/2, buyers; judging from dividends paid, this company seems to be better managed than any other similar one. It is satisfactory to learn they have four large vessels in hand at their works at Govan, and likely to continue busy this year. Monkland done at 51s., closing 50s. 6d. to 51s. 6d. Omon and Cleland done at 51s., closing 50s. to 55s. Phospho-Guano, B, done at 2. Richmond done at 7 1/2, closing 7 1/2 to 7 1/2. South Aurora, 7s. to 9s. Tharsis done at 21 1/2, closing 21 1/2 to 22; new shares, 14 1/2 to 14 1/2. Young's Paraffin done at 7 1/2, closing 7 1/2 to 7 1/2 16ths. Scottish Wagon done at 10 1/2 16ths and 11, closing 11 to 11 1/2.

HUNTINGTON COPPER AND SULPHUR COMPANY (Limited).—A document has been issued by Mr. Alexander McEwen, of London, with reference to the report issued some time since by the committee of investigation. In this document he accepts the responsibility of the purchase of the undertaking and its sale in this country, and gives his story of the circumstances attendant on those transactions, commencing with that for two years the mine had been brought before him again and again as only wanting the application of Henderson's process and railway facilities to make it one of the best things in the world. During this period he had not thought it worth attention, but when Tharsis shares rose from 9s. to 50s., and copper from 70s. to 105s. per ton, he thought the property worth looking after. The document, however, contains no new facts of any importance bearing upon the business, so no more need be said about it at present.

The following are this week's prices of some stocks, shares, &c., occasionally dealt in on this market, but not quoted (with few exceptions) on any of the Scotch Stock Exchanges:—Iron, Steel, and Coal Companies: Andrew Knowles and Sons, 24 1/2 to 24 3/4; Bolckow, Vaughan, & Co., "B," 45s. to 46s.; Britannia Ironworks, 10; Cardiff and Swansea Steam Coal, 28, buyers; Chapel House Colliery, 3 1/2 to 3 1/2; Consett Iron Ore, 20s.; Gauley-Kanawha Coal, 5, sellers; Great Western Colliery, 11 1/2 to 12; Gelly-leg Colliery, 9, sellers; Ifon Rhyn Colliery, 5 to 1; Lehigh and Wilkes Barre, 8 per cent. first mortgage, guaranteed by Central Railroad of New Jersey (U.S.), 93, buyers; Llynvi, Tondu, and Ogmore Coal and Iron, 23 1/2 to 24s.; Llynvi Valley Colliery, 9, sellers; Mersey Steel and Iron, 4 1/2 to 5; Mwyndy Iron Ore, 2; Newport Abercarn Colliery, 4 to 5; North Lonsdale Iron and Steel, 6 to 6 1/2; Powell's Llantrith Colliery, 5 to 1 1/2; Scottish Australian new shares, 4 to 4 1/2; Ulverstone Mining, 10s. to 11; West Cumberland Iron and Steel, 14 1/2, sellers; Whitehaven Iron, 3 1/2; Copper, Lead, Tin, &c., Co., Bedford United, 3 1/2, sellers; Whitehaven Iron, 3 1/2; Copper, Lead, Tin, &c., Co., Bedford United, 3 1/2, sellers; Bensberg Lead, 3 1/2 to 4; Bowdon Hill Manganese, 55, sellers; Cook's Kitchen, 5 to 5 1/2; Copiago Mining, 34s.; Denbigh Consols, 2, sellers; Dowlas, 40 to 41; Drake Walls, 7, sellers; East Caradon, 11s. to 2; East Wheal Grenville, 1s. 6d., sellers; Elgar, 1, sellers; Great Laxey, 15s. to 16; Great West Van, 5 to 5 1/2; Gunnislake (Clitters), 3 1/2, buyers; Hindon Down, 7s. to 1 1/2; Killifreth, 3 1/2; Old Talybont Lead preference, 10, sellers; Valley Mine, 3 1/2 to 3 1/2; New Consols, 12s., sellers; New Pembrokeshire, 12s., sellers; New Querbrada, 4 1/2; North Hendre Lead, 1 to 4; Parys Mountain, 12 to 14; Penrhyn, 8s. to 9s.; Prince of Wales, 4 1/2; Plymbridge Lead, 4 1/2, buyers; Rio Tinto, 6 1/2; Snowbrook, 5, sellers; South Conduorion, 5 1/2 to 6; South Roskera, 11 1/2, sellers; Van, 33 to 34; West Bassett, 5 to 6; West Eggin Lane, 5, sellers; West Maria and Fortescue, 6s., sellers; West Poldice, 24, West Wheal Frances, 8 1/2 to 9 1/2; Wheal Bassett, 22 1/2 to 25; Wheal Kite (St. Agnes), 2 1/2 to 3 1/2; Mary Hutchings, 5 1/2; York Peninsula 15 per cent. guaranteed preference, 4 to 4 1/2; Yorkshire Mining, 3 16ths to 4 1/2; Gold and Silver Companies: Almaden, and Tinto, to 4; Argentine, 6 1/2 to 7; Australasian Mining Investment, 1 1/2 to 5 1/2; Basco Consols, 5, sellers; Battie Mountain, 1 to 1 1/2; Cestrian Creek, 4 to 5; Chontales, 4 to 4 1/2; Colorado Terrible Lead, 2 to 2 1/2; Don Pedro North del Rey, 4 to 5; Eberhardt and Aurora, 9 to 9 1/2; Exchequer, 5 to 7 1/2; Frontino and Bolivia, 36s. to 38s. 6d.; Gold Bank, 18s., sellers; Javali, 5 to 5 1/2; Malpaso, 5s.; New Pacific, 14; New Zealand Kapanga, 2 to 1; Patagonia United, 15s., sellers; Port Phillip & Colonial, 5 to 5 1/2; Rica, 2s. to 4s.; Santa Barbara (late Part), 1 to 1 1/2; South Aurora, 7s. to 9s.; Sweetland Creek, 5 to 5 1/2; Tegoma, 5, buyers; Thornhill Reef, 1 1/2, sellers; Mexican, 2 1/2 to 3 1/2; Welsh, "The," Gold, 5 1/2; Winter's Foothold, 3 1/2, sellers; Miscellaneous Companies: Aberthorn, 7s.; Bede Metal and Chemical, 3 1/2; British Agricultural Association, 1 1/2 to 2; ditto 7 per cent. preference, 5, sellers; Conglog Slates and Slabs, 10, sellers; General Sewage and Manure, 4 to 5; Langdale's Chemical Manure, 5 1/2, sellers; Lawe's Chemical, 7s. to 7 1/2; ditto 7 per cent. preference, 10, sellers; Native Guano, 3 1/2; Newcastle Chemical, 3 1/2; North Cornwall Kaolin, 5, sellers; Phospho-Guano A, 7; ditto B, 2; Thames Chemical, 5, sellers; and subjoined are the latest prices, &c., of those quoted on the Stock Exchanges:—

Capital.	Dividends.	Rate per cent.	Description of shares.	Last price.
Per share.	Paid	per annum.		
share.	up.	Previous.	Last.	COAL, IRON, STEEL.
£10	... 6s.	£10	... £10	... Arniston Coal (Limited) 7
10	... 10	10	14	... Bonhar Coal (Limited) 11 1/2
10	... 6	14	9	... Ditto 6 1/2
100	... 8s.	12 1/2	12 1/2	Bolckow, Vaughan, and Co. (Lim.), A, 5 1/2
10	... 10	10	19	... Calcarious Gas Coal (Limited) 9 1/2
10	... 10	8	nil	... Chillingdon Iron (Limited) 5 1/2
32	... 29	7	12 1/2	... Ebenee Vale Steel, Iron, and Coal (Lim.), 13
10	... 4	nil	nil	... Fife Coal (Limited) 4
10	... 10	—	—	... Glasgow Port Washington Iron & Coal (L.) 81s. 6s.
10	... 10	—	—	... Ditto Prepaid 41s.
10	... 10	—	—	... Llochore and Capledrae (Limited) 7 1/2
10	... 10	5s. 7d.	5	... Maribella Iron Ore (Limited) 4
10	... 10	5	5	... Monkland Iron and Coal (Limited) 81s.
10	... 10	7	7	... Ditto Guaranteed Preference 5 1/2
100	... 100	nil	nil	... Nant-y-Gle & Blaena Ironworks pref. (L.) 32s.
10	... 4	15	15	... Omon and Cleland Iron and Coal (Lim.), 5 1/2
1	... 1	15	12 1/2	... Scottish Australian Mining (Limited) 1 1/2
50	... 50	10	5	... Shoots Iron 6s.
10	... 5	10	5	... Ditto New, issued at 2 1/2 prem. 8
				COPPER, SULPHUR, TIN.
				... Canadian Copper Pyrites (Limited) 29s.
				... Ditto All paid 6 1/2
				... Cape Copper (Limited) 28
2	... 2	—	—	... Dunsley Wheel Phosphorus Tin (Limited) 2s.
1	... 1	—	12 1/2	... Glasgow Caradon Copper Mining (Lim.), 1 1/2
1	... 15s.	12 1/2	12 1/2	... Ditto New 24s.
35s.	... 25s.	—	—	... Huntington Copper and Sulphur (Lim.), 25s. 6s.
4	... 4	—	—	... Kapunda Mining (Limited) 5 1/2
10	... 10	nil	nil	... Panhandle Copper (Limited) 1 1/2
10	... 10	25	25	... Russian Copper (Limited) 3
10	... 7	25	25	... Tharsis Copper and Sulphur (Limited) 21 1/2
1	... 1	—	—	... Yorke Peninsula Mining (Limited) 14 1/2
				GOLD, SILVER.
20	... 20	—	—	... Emma Silver Mining (Limited) 1 1/2
10	... 10	—	—	... Flagstaff Silver Mining (Limited) 1
5	... 5	—	—	... Last Chance Silver Mining (Limited) 3 1/2
				... Richmond Mining (Limited) 7 1/2
				OIL.
10	... 7	2 1/2	5	... Dalmeny Oil (Limited) 5 1/2
10	... 10	—	5	... Uphall Mineral Oil (Limited) 5
10	... 5	—	5	... Young's Paraffin Light & Mineral Oil (L.) 7 1/2
				MISCELLANEOUS.
50	... 25	15	15	... London and Glasgow Engineering & Iron Shipbuilding (Limited) 21 1/2
20	... 11 1/2	—	—	... Peruvian Nitrate (Limited) 11 1/2
10	... 10	8	5	... Scottish Wagon (Limited) 11
10	... 4	8	5	... Ditto New 4 1/2
				Per share.

Last day for this account Jan. 10; settling day, Jan. 13.

NOTE.—The above list of mines and auxiliary associations is as full as can be ascertained, Scotch companies only being inserted, or those in which Scotch investors are interested. In the event of any being omitted, and parties desiring a quotation for them and such information as can be ascertained from time to time to be inserted in this list, they will be good enough to communicate the name of the company, with any other particulars as full as possible.

J. GRANT MACLEAN, Stock and Share Broker.

Post Office Buildings, Stirling, Jan. 6.

#### TRADE OF THE TYNE AND WEAR.

Jan. 6.—There has been a demand for all good-class coals during the past week, and large shipments have been made of best steam and gas and house coals. As very little work has been done at the collieries stocks have been reduced considerably; and as the output, even when the collieries are worked, has been reduced in many cases, those stocks must ultimately, if the present demand keeps up, disappear. Some time must yet be consumed in making the necessary arrangements for settling the disputes respecting wages in the coal and iron trades; it is, however, evident that not much business of any kind will be done until those questions are settled, and this can hardly be effected before the end of the present month. Very little work has been done at the collieries; all the men have got an amount of holiday which has not been known in this district for some years. All new works and doubtful works have been stopped or suspended where it is possible to do so. There is an entire lack of the spirit of enterprise at present. The contrast between the state of mining and commercial affairs here with what existed in 1873 is simply marvellous. At most of the ironworks, engine-works, and foundries in the district, at least a fortnight's holiday has been given, and at the shipyards on the Tyne little work is being done, while notice has been given in some cases that a reduction will be made in the wages paid to all classes of workmen employed.

There was a large gathering at Middlesbrough on Tuesday last, but taking all round the prices of pig-iron was not much changed from the quotations of the previous week. Forge-iron, through a scarcity and somewhat enlarged demand, was 6s. higher, but though makers sought to increase the rates of No. 3 buyers did not respond, and 5s. to 5s. 6d. was about the prevailing figure, whilst forge No. 4 averaged about 5s. The holidays have to some extent interfered with business. Deliveries of pig-iron, though they have been well sustained on the whole, have been less regular, whilst many of the finished ironworks have done little for the last fortnight in cases where work has not been given out; they have, however, recom-

menced work this week, though, unfortunately, there is no improvement noticeable from the chronic depression which lately prevailed, and more men have been laid off in some parts of the district. The distress has not been so severe, however, as was expected, and hitherto has been amply met. The finished iron trade generally is very quiet, and is expected to remain so till after the wages settlement, when there are hopes entertained of a few more orders being put in the market. Rails are unchanged at 6s. 12s. 6d. to 6s. 15s., and plates at 7s. 12s. 6d. The upward advance of pig-iron prices tends to make the position of the manufacturers less satisfactory. Coal is dull, and prices unchanged. Coke firm at 12s. 6d. for best furnace qualities, and 1s. more for foundry coke.

#### REPORT FROM LANCASHIRE AND CHESHIRE.

Jan. 5.—The holidays have, as usual, greatly interfered with business, and in the Coal Trade especially things have been very dull. The demand for home supplies has been checked by the exceeding mildness of the weather, and there have been signs of a speedy reduction in prices. At present they are as follows:—Best house coal, 13s. 6d. to 14s.; Pemberton four-feet, 11s. to 12s.; common coal, 9s. to 9s. 6d. Slack is very cheap and plentiful, and there are few enquiries for coke. In the Iron Trade scarcely anything is being done, nearly all the works having had exceptionally long holidays. The railway companies announce an increase of 6d. per ton in the rates for conveying coal to the depots in the Metropolis and district. The colliery proprietors hereabouts would not grumble at any reasonable increase in tariffs if it secured something like punctuality in the forwarding of trains. Things have not been quite so bad these few days as they were a week or two ago, but now that the pits are in full work again the inconvenience and annoyance will soon be felt as heavily as ever.

The movement for increasing the facilities for technical education in South Lancashire is making very rapid progress. Since the first meeting was held in Manchester barely a month has elapsed, and during that time the scheme has been matured, and close upon half the sum said to be required for building purposes, and nearly all the sum needed for the annual maintenance of the institution, have been promised. The chief contributors are the Wigan Coal and Iron Company, who gave 2500/-; the Earl of Crawford, 1000/-; Mr. A. Hewlett (Wigan Coal and Iron Company), 500/-; and Colonel Blundell, 500/- At a meeting of the executive committee on Tuesday steps were taken with a view to the obtaining of a site near to the Free Library, which is in course of erection, and which is to be made a high class technical reference library. A bequest of 11,000/- is available for the purchase of books. In addition to carrying on the present work of the school it is arranged to form a centre in connection with the Cambridge University extension scheme, and lecturers are to be forthwith started. Mr. Hewlett guaranteeing the cost. In the premises it is proposed to provide accommodation to be found for a museum, laboratory, lecture rooms, model-rooms, and all the machinery required for technical education of the highest sort. The buildings are to cost 12,000/-

#### ACCIDENTS IN COLLIERIES.

[FROM A CORRESPONDENT.]

The colliery fatalities of the past year, and suggestions for lessening their extent and providing for the widows and orphans created by them, were prominently brought forward in the annual address of Mr. JOSEPH NEWTON, C.E., President of the London Association of Foremen Engineers and Draughtsmen, at the meeting on Saturday. It has been frequently demonstrated that considering the number of workpeople employed in the collieries of Great Britain, the annual number of deaths from accident is considerably smaller than in many other trades, though from the circumstance of colliers being killed in batches, instead of one or two at a time, greater attention is directed to colliery accidents. The facts actually recorded by the Government Inspectors show that, taking the number of persons employed, the annual death rate has not materially varied during the past 20 years, and this is equivalent to a substantial improvement, since, as was frequently pointed out in the *Mining Journal* by the late MATTHIAS DUNN—certainly one of the most experienced Inspectors—the difficulty of working a colliery without accident increases year by year as the workings become more extensive, so that to prevent any serious increase in the death rate is as much as should be expected from the most efficient inspection and management.

If anything can be done to lessen the number of casualties in collieries none would be more willing to lend their aid and influence than the Government Inspectors and certified managers of collieries, but it is an unjust and unprofitable reflection upon both these classes of officials to assume that collieries could be more safely managed than at present; whilst it is an admitted and indisputable fact that, to use round numbers, the accidents in collieries cause but one death annually among each five hundred employed (the exact figures, as given in the Government Inspectors' reports, recently published in the *Mining Journal*, show that in 1873 there were 512,199 persons employed, and that 1 in each 479 was killed; in 1874 there were 538,820 persons employed, and 1 in each 510 was killed), and whilst it would be difficult to find an engineer's establishment in the kingdom in which the accidental deaths, taking the average of any five consecutive years, are less than three times as fatal—that is to say, whilst the deaths from accidents amongst colliers are but one per year for every 500 employed, the deaths from accidents among engineers are one per year for every 150 employed; so that if the Ministers of State are to be called upon "to endeavour to put a barrier between the 1200 doomed colliers, and their otherwise inevitable destiny," how much more loudly should they be called upon to do the same for the 5000 "doomed engineers and their otherwise inevitable destiny." It is but too common for men to write and talk sentimentally about matters with which they are but imperfectly acquainted, but surely these facts and figures will show that if the superintendents of engineering establishments and foremen engineers display as much energy and foresight as the Government Inspectors and certified managers of collieries there will be less than 500 "doomed engineers" to leave widows and orphans to provide for.

To think of compulsory life insurance for colliers without extending the compulsion to all classes of workmen would, of course, be impolitic, yet no one could object to something being done for the widows and orphans not only of "doomed colliers," but of "doomed mechanics" generally; and as the question is at present as to the colliers only they alone need claim attention. Mr. NEWTON asserts, no doubt truly, that colliers frequently disregard even the most obvious means of ensuring their own safety, and opines that nothing short of better education and higher intelligence would overcome the evil; but this opinion seems scarcely tenable when the better educated and more intelligent engineers are between three and four times more careless than colliers. The suggestion that employers should pay compensation when their workmen commit suicide is likewise impracticable, so that the question is reduced to that of raising a fund for the widows and orphans of sufferers by colliery accidents. Upon this point Mr. TOWERS—a general relief fund for the entire kingdom, a central office in London, and certain definite contributions in proportion to the quantity of coal raised—and none so strongly opposed the proposition as the colliers themselves, who saw at once that the system would be open to the grossest abuse, and that the object in view would certainly not be attained.

## COAL MINES REGULATION ACT, 1872.

EXAMINATION FOR MANAGERS' CERTIFICATES OF COMPETENCY.  
DISTRICT UNDER THE CHARGE OF J. P. BAKER, Esq.  
H. M. INSPECTOR OF MINES.

NOTICE IS HEREBY GIVEN, that an EXAMINATION for MANAGERS' CERTIFICATES OF COMPETENCY, under the above-named Act, will be HELD on the 24th day of January, and CANDIDATES INTENDING TO PRESENT THEMSELVES AT SUCH EXAMINATION must, on or before the 17th day of January, 1876, notify such intention to the Secretary of the Board of the above-mentioned district, from whom all information as to particulars can be obtained.

By order of the Board,

WM. BLAKEMORE, Secretary,  
Heathfield Villa, Wolverhampton.

H. M.—Persons who do not reside within the district are equally eligible for examination with those who do.

## TO ENGINEERS, AND OTHERS.

THE DIRECTORS OF THE ROCHESTER, CHATHAM, AND STROUD GAS-LIGHT COMPANY OFFER A PREMIUM OF ONE HUNDRED POUNDS for the BEST DESIGN, with all necessary working drawings, for UNLOADING COALS from STEAM COLLIERs and SAILING VESSELS at their works at ROCHESTER.

Lithographic plans, showing site, and particulars of apparatus required, may be had on application to the Secretary, at the office of the company, 66, High-street, Rochester.

Plans to be delivered on or before February 29th, 1876.

By order, W. SYMS, Secretary.

THE DIRECTORS of the GIONA SULPHUR COMPANY (LIMITED) are PREPARED to RECEIVE TENDERS from PARTIES DESIRous of LEAVING their MINES in SICILY.

The property comprises about 300 acres, on which are the well-known mines of Giona, Giomata, Tenuta, Tenutella, &c., a few miles from Girgenti.

All tenders must contain the names of two referees, and the lessor or lessees will be required to deposit the sum of £5000 as security for the due performance of the covenants of the lease. Draft lease, and all further particulars may be seen at the offices of the company, 41, Wool Exchange, Coleman street, City, London (where tenders are to be sent).

The directors do not bind themselves to accept the highest or any tender.

Tenders will be sent in not later than the 25th January, to be opened on the 27th January, 1876.

IN THE MATTER OF THE NEW DEVON CONSOLS COPPER MINING COMPANY (LIMITED).

## IN LIQUIDATION.

THE CREDITORS of the ABOVE-NAMED COMPANY are required, on or before the 18th day of January, 1876, to SEND THEIR NAMES AND ADDRESSES, and the PARTICULARS OF THEIR DEBTS OR CLAIMS, and the NAMES AND ADDRESSES of THEIR SOLICITORS (if any) to the undersigned Liquidator of the said company, at the offices of Mr. W. M. WARD, Crosby House, 95, Bishopsgate-street Within, London, in default thereof they will be EXCLUDED FROM THE BENEFIT OF ANY DISTRIBUTION made before such debts or claims are proved.

The 19th day of January, 1876, at Three o'clock, at the office of Mr. W. M. WARD, 95, Bishopsgate-street Within, London, is appointed for settling the lists of debts and claims.

JOHN LILLEY, Liquidator.

Dated this 1st day of January, 1876.

LEAD AND BLENDE MINING IN CORNWALL.

THE PROPRIETOR of the ABOVE MINES—capable, from discoveries already made, to return 50 to 60 tons monthly—WANT PARTIES of CAPITAL and POSITION to JOIN with £1000 to EXTEND THE WORKINGS through the formation of a PUBLIC COMPANY. Capitalists with the whole sum, and not less than £250 each, treated liberally. No agent need apply. Principals alone treated with. An unexceptionable opportunity offers for profitable investment for energetic, retired mercantile or commercial gentlemen. A seat on the board if desired.

Apply, per letter, to "Miner," 24, Guildford-street, Russell Square, London, W.

PRINCE PATRICK LEAD MINING COMPANY (LIMITED).

Notice is hereby given, that the directors have THIS DAY DECLARED a DIVIDEND of ONE SHILLING and THREE PENCE PER SHARE, payable, free of income tax, on and after the 19th January instant.

This DIVIDEND, with the INTERIM DIVIDEND paid October last, makes TWO SHILLINGS AND SIXPENCE PER SHARE for the HALF YEAR, being at the rate of 25 per cent. per annum on the capital of the company.

By order, THOS. HUGHES, Secretary.

50, Seel-street, Liverpool, 3rd January, 1876.

A USTRALIAN CENTRAL GOLD MINE COMPANY (LIMITED).

Notice is hereby given, that an EXTRAORDINARY GENERAL MEETING of the shareholders in the Australian Central Gold Mine Company (Limited) will be HELD at the offices of the company, No. 5, Austinfriars, London, on WEDNESDAY, the 12th day of January, 1876, at One o'clock P.M. precisely, for the purpose of passing a Special Resolution, authorising the Directors to increase the capital of the company, by the issue of 2000 shares of £1 each, to be preferred in respect of dividends on the same terms as the present 10,000 preference shares already issued under the Special Resolution passed on the 6th August, 1875, and confirmed on the 25th August, 1875.

By order, J. H. MURCHISON, London Manager and Secretary.

8, Austinfriars, London, 28th December, 1875.

SUNNYSIDE LEAD MINING COMPANY (LIMITED).

Mr. HENRY THOMPSON, of No. 5, FINSBURY CHAMBERS, LONDON WALL, E.C., has SPECIAL BUSINESS in the above Company as BUYER or SELLER. Particulars on application.

SUNNYSIDE LEAD MINEs.

The adit level in this property has now been driven nearly 600 fms., and it is more than probable that the great lode traversing this sett will be intersected in the course of a few fathoms further driving.

SUNNYSIDE LEAD MINING COMPANY (LIMITED).

Notice is hereby given, that a GENERAL MEETING of shareholders in the above Company will be HELD at the London Tavern, Bishopsgate street, E.C., on THURSDAY, the 14th January instant, at Two o'clock P.M.

G. B. CAUNTER, Secretary.

## GUIDE TO INVESTMENTS.

Published monthly, 5s. per annum.

S PARGO'S "GUIDE TO INVESTMENTS" affords information (ample and correct) of all the best paying investments. Capitalists and men of business should consult the "Guide" for reliable and valuable intelligence.

The Next Issue will contain full particulars of the Lead Mines of Durham, with a plan of the county.

Copies can be obtained as above, or from Messrs. Wertheimer and Lea, printers, Finsbury place, E.C.

THOMAS SPARGO, 62, Cornhill, E.C.—Established Twenty-six Years.

MESSRS. TREDINNICK are DEALERS in CONSOLS and all other British Funds, Home, India, and Colonial Stocks and Bonds, Railway Shares, Stocks, and Debentures, Board of Works, Metropolitan City, with other sound Securities, and Miscellaneous. British and Foreign sound dividend paying, 20 to 30 and 40 per cent. on capital. South Carolina pays no less than 60 per cent. Finance, all marketable properties; Coupons and Dividends collected. Several investments are now open to pay 10 to 12 per cent. interest. £200 to £300, a rare opportunity.

43, Bishopsgate-street, London, E.C.

THE GREAT ADVERTISING MEDIUM FOR WALES.

THE SOUTH WALES EVENING TELEGRAM (DAILY), and

SOUTH WALES GAZETTE (WEEKLY), established 1857.

the largest and most widely circulated papers in Monmouthshire and South Wales.

CHIEF OFFICES—NEWPORT, MON., and at CARDIFF.

The "Evening Telegram" is published daily, the first edition at Three P.M., the second edition at Five P.M. On Friday, the "Telegram" is combined with the "South Wales Weekly Gazette," and advertisements ordered for not less than six consecutive insertions will be inserted at an uniform charge in both papers.

F. O. O. and cheques payable to HENRY RUSSELL EVANS, 14, Commercial-street, Newport, Monmouthshire.

Now ready, price 3s., by post 3s. 3d., Sixth Edition; Twentieth Thousand Copies much improved, and enlarged to nearly 300 pages.

H OPTON'S CONVERSATIONS ON MINES, between Father and principally questions and answers, with a view to assist applicants intending to pass an examination as mine managers, together with tables, rules of measure and, other information on the moving and propelling power of ventilation, subject which has caused so much controversy.

London: MINING JOURNAL Office, 26, Fleet-street; and to be had of all booksellers.

In the Court of the Vice-Warden of the Stannaries.  
Stanhares of Cornwall.

**I**N the MATTER of the COMPANIES ACTS, 1862 and 1867, and of the NEW DOLCOATH TIN AND COPPER MINING COMPANY (LIMITED).—TO BE SOLD, under the direction of the Registrar of the said Court, on Friday, the 14th day of January instant, at Eleven o'clock in the forenoon, at the New Dolcoath Tin and Copper Mine, in the parish of Camborne, within the said Stannaries, in Lots (subject to such conditions as shall be then and there produced), the WHOLE of the undermentioned.

## MINING PLANT, MACHINERY, MATERIALS, AND EFFECTS belonging to the said company, and being within and upon the said mine, and comprising—

ONE 22-in. WHIM ENGINE, 1 1/4-ft. cage whim, about 200 fms. wire rope, 100 fms. whim chain, 20 fms. 5 in. lift, 5-in. plunger pole, stuffing box and glands, 180 fms. tramroad, 2 new tram wagons, 20 fms. ladder road, 5 whim kibbles, 3 shaft tackles, 3 sheaves, wrought-iron tube (in the dry), 20 pulleys and stands, 1 new tram wagon, 1 head patent stamps, about 20 fms. tramroad, measuring chain, launders, screw stock, and new screwing taps and plates.

SMITHS' SHOP.—1 turning lathe, new and old copper grates, about 1 ton borers, mallets, picks, and smiths' tools, new and old rope, tin and candle chests, tallow, candles, powder and powder cans, hilt, a quantity of steel, hoop iron, nails, rivets and blocks, 2 sampling irons, barrows, grinding stone, carpenters' bench, cross-cut and hand saws, carpenters' tools, locker, several seves, shed, picking table and hatch; a quantity of account house furniture, and other effects in general use in mines.

To inspect the above, apply to the Balliff in charge at the mine; and for further particulars to Mr. CHARLES WILLIAM CLINTON, the Official Liquidator of the said company, at the Stannaries Court Office, Truro.

HODGE, HOCKIN, AND MARRACK, Truro.  
(Solicitors for the said Official Liquidator).

Dated Stannaries Court Office, Truro, January 5th, 1876.

## IN LIQUIDATION.

IMPORTANT MINING PROPERTY, near EXETER, DEVON, FOR SALE BY AUCTION, by Order of His Lordship, Vice Chancellor MALINS.

IN THE MATTER OF THE COMPANIES ACTS, 1862 and 1867; AND IN THE MATTER OF THE LIQUIDATION OF THE CORNISH CONSOLIDATED IRON MINES CORPORATION (LIMITED).

M R. W. J. JOHNS (of Truro) is instructed TO SELL, BY AUCTION, on Thursday, 26th January, 1876, at Eleven for Twelve o'clock, on the premises, all those VALUABLE IRON MINES, known as the

HENNOCK MICACEOUS SETT; and the

SOUTH EXMOUTH SPATHOSE AND LEAD SETT.

Situate in the parish of Hennox, near Exeter, Devon, held by the Cornish Consolidated Iron Mines Corporation (Limited), under a grant to them for a term of which nearly 30 years are now unexpired, together with all the ENGINES, PLANT, MACHINERY, and GEAR thereon or thereunto belonging.

The MINES will be OFFERED FOR SALE in One Lot, with the option for the purchaser to take the engines, plant, machinery, and gear, at a valuation to be made by two valuers or their umpire in the usual way. In the event of the mine not being sold, or of the purchaser declining to take the engines, plant, machinery, and gear, the latter will be offered for sale either in One Lot, or in several lots, as the Auctioneer may deem advisable.

About 1500 TONS of VALUABLE SPATHOSE IRON ORE, on the premises, will be OFFERED FOR SALE in separate lots.

Particulars, with conditions of sale, may be obtained on and after Tuesday, the 11th of January, from the Auctioneer, at his office, Edward street, Truro; from the Official Liquidator, FREDERICK WHINNEY, Esq. (from the firm of Messrs. Harding, Whinney, and Co.), of 8, Old Jewry, London; from HENRY SMITH, Esq., Solicitor, of 33, Norfolk street, Strand, London; from Mr. J. O. HARRIS, of Gandy-street Chambers, Exeter; or from Messrs. COPE and CO., of 26, Great George street, Westminster, the Solicitors for the Official Liquidator.

The property may be viewed at any time before the day of sale on application to the Auctioneer.

Dated Edward-street, Truro, January, 1876.

## SHARES IN A CELEBRATED MINING PROPERTY IN CHILI,

YIELDING LARGE PROFITS, FOR SALE.

TO BE SOLD, BY AUCTION, at the Mart Tokenhouse-yard, in the City of London, on Tuesday, the 23rd day of May, 1876, at Two o'clock precisely, by MESSRS. DRIVER, in One or more Lots,

THREE SHARES in Chili designated Barro in the CARRIZALILLO MINING COMPANY. The company is divided into 24 shares only.

The CARRIZALILLO COMPANY is the celebrated DESCUBRIDORA MINA, and the three adjoining sets of SAN JUAN, CANCHAS, and SAN FRANCISCO, which are all worked under one administration, and are situate about thirty-three miles from the Port of Pan de Azucar, from whence there is a good road.

The DESCUBRIDORA MINA has been working since 1859, and has yielded large profits. There are two steam-engines at work, one of 29-horse power and one of 8-horse power, for drawing, and there is also a newly-erected powerful engine, with Blake's crusher attached; by the use of the latter the company is enabled to draw and return the large accumulation of low-grade ore, which will now give considerable profit. The mine is in thorough working order, and well stocked with materials, rails, rollers, crushers, &c.

The adjoining sets of SAN JUAN, CANCHAS, and SAN FRANCISCO were acquired for the purpose of securing the ground around the Descubridora Mine, and they have since been worked on a limited scale. There is also a shop, which supplies the workpeople, and also horses, carts, and mules.

Also the VEGA WASHING AND JIGGING ESTABLISHMENT, with yards, house, shop, and store, about one mile from Descubridora (a tramroad is being laid down from the mine, which will greatly lessen the cost of carriage to the Vega). There are also dwelling houses, bake-houses, yards, store-rooms, ore floors, and mule of Pan de Azucar, with convenient launcher for ore. In loading ships with the ore; and there is also belonging to the company a quinqueine establishment, a dwelling place, situated about eleven miles from Pan de Azucar, on the road to Descubridora, with dwelling house, shop, store, mule yard, water carts, mules, and harness; and in Chancal Port, a dwelling house of eight rooms, and spacious balcony and store above, with good counting house.

The company also have a Chancal, other houses and sites, and also a complete condensing apparatus, with four boilers, &c., &c.

Two-thirds of Descubridora, San Juan, Canchas, and San Francisco, with some other property of comparatively small value, were sold in 1872 for the aggregate sum of £90,000, and since then profits have been divided much more than sufficient to repay the purchase-money, and there is every prospect of Descubridora continuing to give large profits for considerable time.

Printed conditions of sale will be shortly ready, and further particulars can be obtained in Chili from ROBERT PEELEES, Esq., Chancal, Chili; and in England from MESSRS. DRIVER, the Auctioneers, Whitehall, London; or of

S. T. G. DOWNING, Solicitor, Redruth, Cornwall.

## FFOY COLLIERY.

Consisting of a SLANT, with air shafts, underground openings, fitted with pumping and winding ENGINES, gearing, and necessary machinery, estimated to be capable of yielding from 100 to 300 tons of coal per day. Together with certain Branch Railways connecting the colliery with the existing lines in the Gwendraeth Valley. The distance from the colliery to the shipping place and to the Great Western Railway at Burry Port is about eight miles. The coal produced is that known as anthracite, and of excellent quality.

The above property is held under three leases at sleeping rents, the maximum of the aggregate of which amounts to £480 per annum. The royalty on coal and culm is 4d. per ton, 4d. per ton on fire-clay as to a part, and 6d. per ton as to the other part, and 6d. per ton on the bronson comprised in two of the said leases.

The whole of the above property is situated in the hamlet of Glyn, in the parish of Llanelli, in the county of Carmarthenshire.

Particulars and conditions of sale may be obtained gratis of the Auctioneer, Hall-street, Llanelli; of WILLIAM ROSE, Esq., Mining Engineer, Greenfield, Hall, Llanelli; of MESSRS. SPEECHLY and CO., Solicitors, 1, New Inn, Strand, London, W.C.; of MESSRS. SMITH and PAUL, Solicitors, Truro, Cornwall; and of ROBERT JOHNSON, Esq., Solicitor, Hall-street, Llanelli.

## THE HENDON SPELTER WORKS.

TO CAPITALISTS, PROMOTERS OF PUBLIC COMPANIES, & OTHERS.

FOR SALE, in consequence of the Death of the late Senior Partner, John Candler, M.P., the SPELTER WORKS, situate at Hendon, in the borough of Sunderland, in the county of Durham, carried on under the style of "THE HENDON SPELTER COMPANY."

The works are situated within one mile of the well known docks of the port of Sunderland, and adjoining the Hartlepool Branch of the North Eastern Railway, with which they are connected by high and low level sidings, and thereby placed in communication with all parts of the United Kingdom. Their position, within easy distance of both the ports of Newcastle and Sunderland, is very advantageous for the cheap importation of raw material, as also the forwarding of the manufactured article either by land or sea.

The ground on which the works are built can be either bought out or bought on a yearly perpetual ground rent, and any quantity under 20 acres can be included in the sale.

Being situated in the midst of the Durham Coal Field fuel of the best description can be obtained at a cost below almost any other part of the United Kingdom. There are 19 workers' cottages, which can be bought with the works.

The works contain 24 zinc furnaces, capable of producing 70 tons of metal a week, as also calciners, pottocks, machinery, blacksmiths' and joiners' shops, &c., of sufficient capacity for a much larger number. The works can, therefore, be doubled at a comparatively small cost.

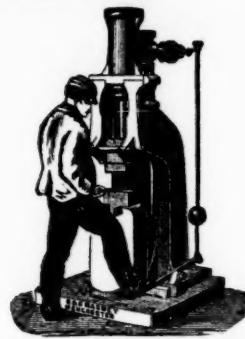
The quality of the metal made at these works is well known, and it, therefore, commands a ready sale at the highest prices.

Attached to the high level sidings are large depots for

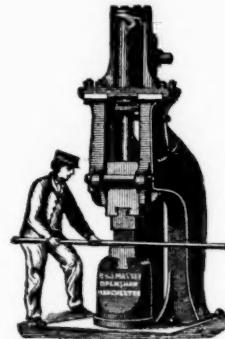
# B. & S. MASSEY, OPENSHAW, MANCHESTER.

PRIZE MEDALS Awarded:—Paris, 1867; Havre, 1868; Highland Society, 1870; Liverpool, 1871; Moscow, 1872; Vienna, 1873; Scientific Industry Society, 1875; Leeds, 1875.

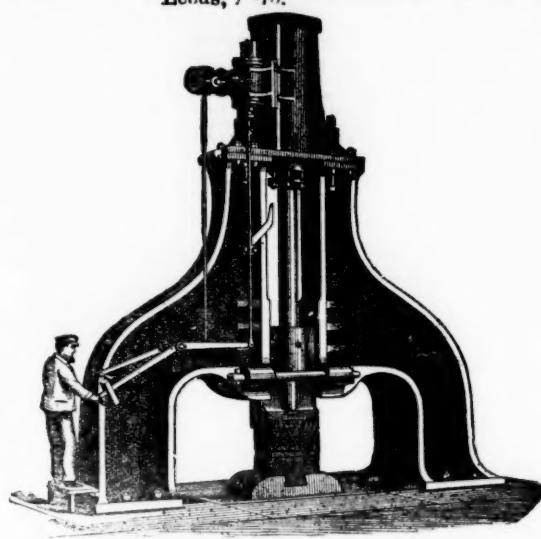
Patentees and Makers of Double and Single-acting STEAM HAMMERS of all sizes, from  $\frac{1}{2}$  cwt. to 20 tons, with self-acting or hand motions, in either case giving a perfectly DEAD BLOW, while the former may be worked by hand when desired. Large Hammers, with Improved Framing, in Cast or Wrought Iron. Small Hammers, working up to 500 blows per minute, in some cases being worked by the Foot of the Smith, and not requiring any separate Driver.



Hammer with Foot Motion.



General Smithy Hammer.



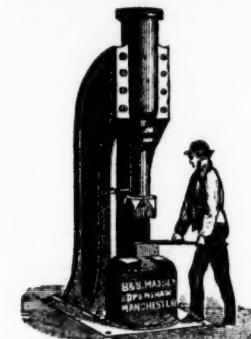
Steam Hammer for Heavy Forging.

SPECIAL STEAM STAMPS, for Forging, Stamping, Punching, Bolt-making, &c.

STEAM HAMMERS for Engineers, Machinists, Ship-builders, Steel Tilters, Millwrights, Coppersmiths, Railway Carriage and Wagon Builders, Colliery Proprietors, Ship Smiths, Bolt Makers, Cutlers, File Makers, Spindles and Flyer Makers, Spade Makers, Locomotive and other Wheel Makers, &c.; also for Use in Repairing Smithies of Mills and Works of all kinds for straightening Bars, bending Cranks, breaking Pig-iron, &c.



Special Steam Stamp.

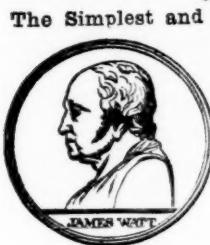


General Smithy Hammer.

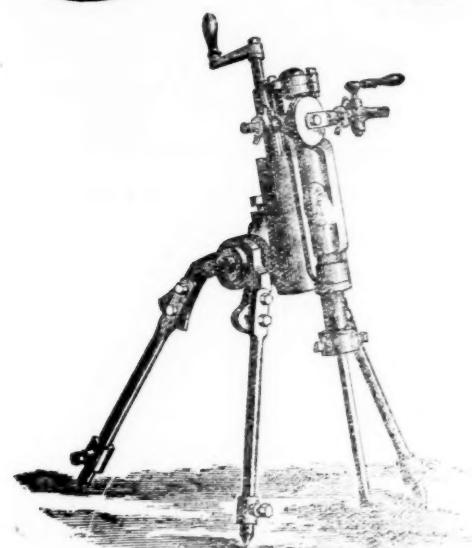
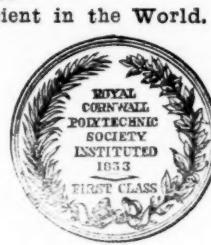
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THIS DRILL WILL BORE THE HARDEST GRANITE with great rapidity, without getting out of order.

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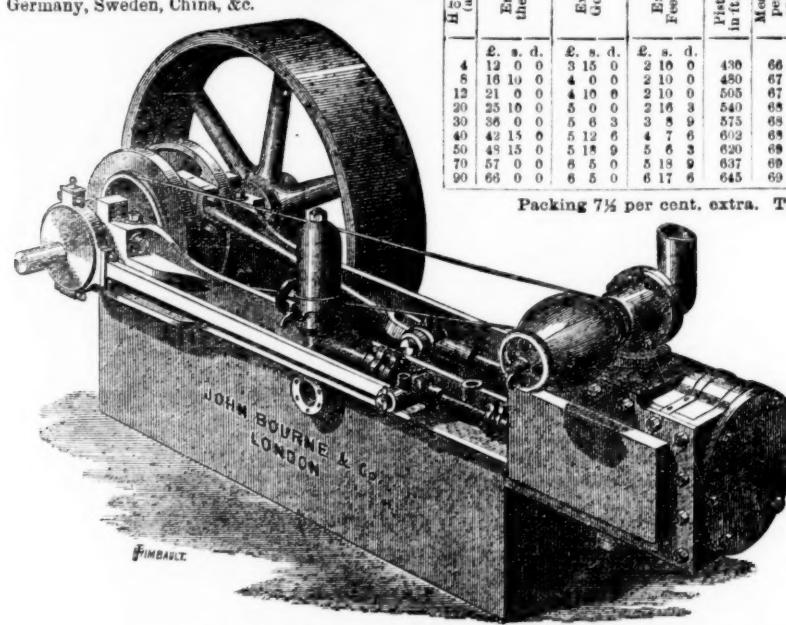
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THE BEST AND CHEAPEST SMALL ENGINES MADE.

These engines have just been awarded a Silver Medal at the Manchester Exhibition, and about 1800 H.P. of them have been sold in a few months to North and South America, New Zealand, Australia, the Cape, Russia, Spain, Portugal, France, Germany, Sweden, China, &c.

H.P. (H.P. actual).	PRICES.						
	Engine at the Works.	Extra for Governor.	Extra for Feed-Pump.	Piston speed in ft. per min.	Mean press. per sq. in.	Tubular Boiler.	Extra for Mounting.
4	£. s. d.	£. s. d.	£. s. d.	430	66	27 17 0	10 10 0
8	12 0 0	3 15 0	2 10 0	480	67	35 5 6	10 18 6
12	21 0 0	4 10 0	2 10 0	505	67	40 3 0	11 18 6
20	25 10 0	5 10 0	2 15 3	540	68	47 15 0	13 3 0
30	36 0 0	5 6 3	3 5 9	575	68	57 19 4	15 13 0
40	42 15 0	5 12 6	4 7 6	602	68	70 9 0	17 11 0
50	49 15 0	5 18 9	5 6 3	620	68	84 4 0	18 2 0
70	57 0 0	6 5 0	5 19 9	637	69	Two boilers.	
90	66 0 0	6 5 0	6 17 6	645	69	Two boilers.	

Packing 7½ per cent. extra. Terms, Cash.



From ANDREW LAMB, Esq., Superintending Engineer, P. and O. Steam Co.

Peninsular and Oriental Steam Navigation Company, Southampton, March, 1875.

I have carefully examined your Patented High-Pressure High-Speed Steam-Engine. Knowing as I do how many improvements in the steam-engine you have inaugurated during the last forty years, which have been silently adopted and are now in general use, it does not surprise me that you have again made a happy hit, and brought out an engine which exactly meets one of the most pressing wants of the day. The speed and pressure of your engine are greater than is usual in other engines; but with a due proportion of rubbing surface, nothing in the way of undue wear is to be apprehended from the speed, and boilers and engines can easily be made strong enough to bear almost any pressure with safety. The indicator diagrams are very good, and they show that though the engine is small it generates the power. Your invention of balancing the momentum of the moving parts, already adopted in the best engines for steam navigation, enables engines to be run at almost any speed without inconvenience, if well constructed in other respects; and in your present engine you have embodied the best engineering knowledge of the age, with the addition of several features of originality and importance. While, then, the disadvantages of your engine are *nil*, its advantages are great and manifest. A high pressure and high speed render possible large expansion, with a great saving both in coal and water. Then the motion is more equable than in common engines, and the weight of machinery and the space occupied by it are small. The most remarkable feature, however, is the wonderful reduction of first cost which your system permits; and people will now have engines who before thought them quite beyond their reach. Their production, as I understand, you have reduced to a manufacture. To sum up the whole in a few words, you have, in my opinion, brought out a machine long wanted, and likely to produce a revolution in that class of engine, as it can be adapted for almost any purpose.

ANDREW LAMB.  
To John Bourne, Esq., C.E., Author of "A Treatise on the Steam-Engine," "A Catechism of the Steam-Engine," &c., &c.

Balanced Compounds for Pumping and Winding, for Mills, &c., equally moderate.  
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The advantages possessed by these machines over others are—

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- 3.—THE DURABILITY OF THE WEARING PARTS.
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- 6.—THE SMALL AMOUNT OF POWER REQUIRED TO DRIVE THEM.

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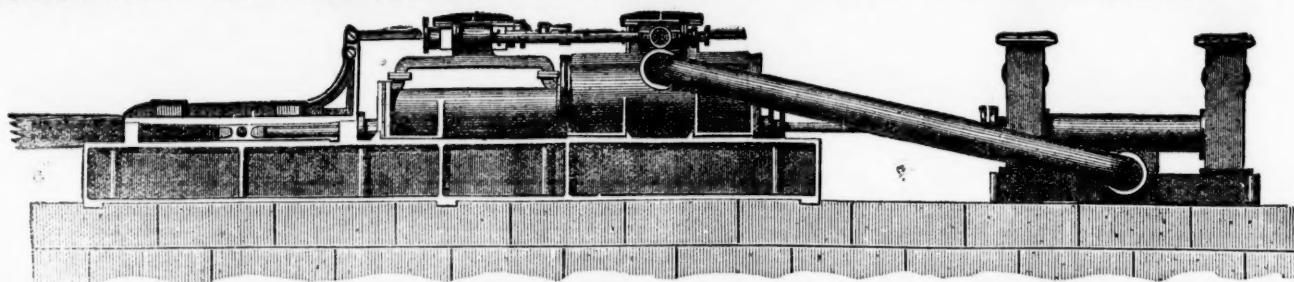
N.B.—Any person or persons infringing on the patent or manufacture of these machines, or any part thereof, will be prosecuted under the Act.

Estimates given for all classes of Mining Machinery, &c., for home and foreign supply.

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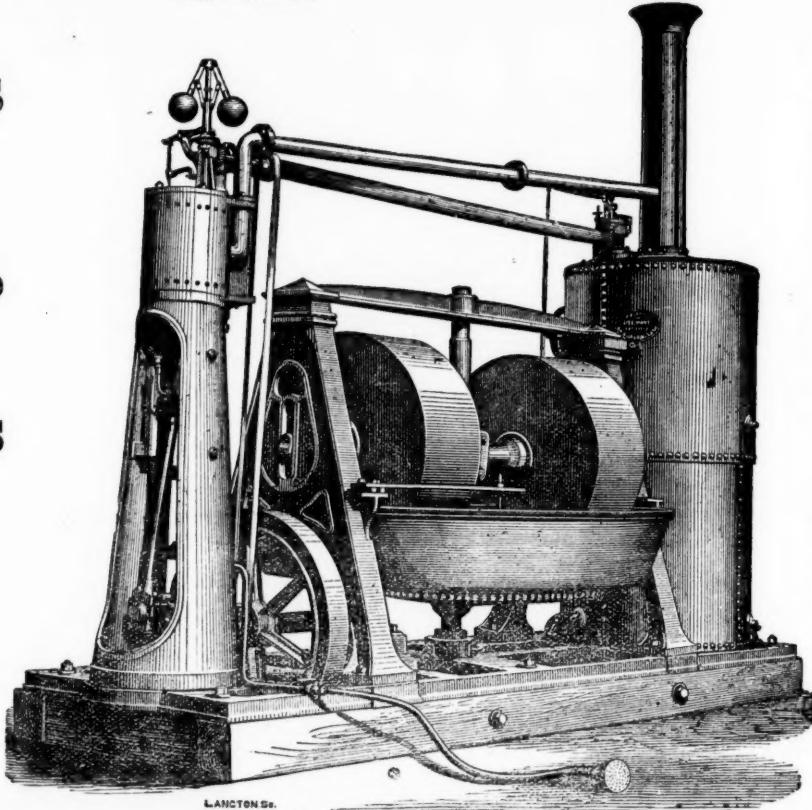
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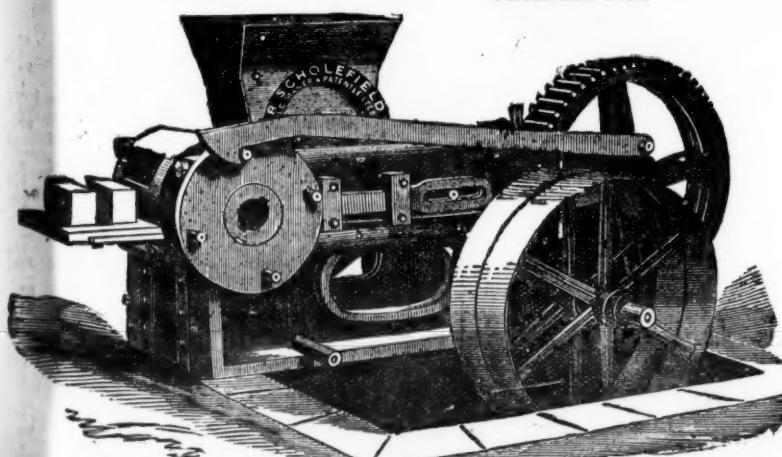
PORTABLE  
Steam Engines  
With Gear for  
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Pumping, and Ore  
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ALSO,  
COMBINED MILLS  
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BOILERS,  
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LATEST PATENT BRICK-MAKING MACHINE.

PATENTED 1873.



production, and the hands required to make 10,000 pressed bricks per day:—

2 men digging, each 4s. per day	20 8 0
1 man grinding, 4s. 6d. per day	0 4 6
1 boy taking off bricks from machine, and placing them in barrow ready for the kiln, 2s. per day	0 2 0
1 boy greasing, 1s. 6d. per day	0 1 6
1 engine-man, 5s. per day	0 5 0
1 man wheeling bricks from machine to kiln, 4s. per day	0 4 0

Total cost of making 10,000 pressed bricks 21 5 0, or 2s. 6d. per 1000.

(SETTING AND BURNING SAME PRICE AS HAND-MADE BRICKS.)

N.B.—Where the material can be used as it comes from the pit, the cost will be reduced in digging.  
As the above Machinery is particularly adapted for the using up of shale, bind, &c., it will be to the advantage of all Colliery Owners to adopt the use of the  
said Brick-making Machinery.

THE MACHINES CAN BE SEEN IN OPERATION AT THE WORKS OF THE SOLE MAKER AND PATENTEE DAILY.  
SCHOLEFIELD'S ENGINEERING & PATENT BRICK MACHINE WORKS,  
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THE "CHAMPION" ROCK BORER  
For Tunnels, Mines, Quarries  
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The "CHAMPION" Rock Borer has been designed after years of experience of other Rock Drills; it surpasses them in their good qualities, and avoids their imperfections, and while being of the very best make and material, it is absolutely the cheapest in the market.

Intending purchasers can satisfy themselves of the excellence of this Rock Borer by seeing it in actual operation.

Improved Air-Compressors, &c.

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Semi-portable and fixed Winding, Hauling, and Pumping Engines.

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## THE MINING SHARE LIST.

BRITISH DIVIDEND MINES.												
Shares.	Mines.	Paid.	Last Pr.	Clos. Pr.	Total divs.	Per share.	Last paid	Mines.	Paid.	Last Pr.	Clos. Pr.	
1500 Alderley Edge, c, Cheshire*	10 0 0	—	—	—	12 5 8	0 6 0	Jan. 1875	10000 Aberdaunant, t, Llanidloes*	1 0 0	13 4	13 4	
11000 Balmynorth, t, Wenvron (4000 to ls.)	1 0 0	—	—	—	6 2 0	0 2 0	Nov. 1875	10000 Aberdunant, t, Llanidloes*	8 0 0	—	—	
30000 Bampyddle, c, t, mn, Devon*	1 0 0	—	13 4	13 4	6 2 0	0 2 0	June 1873	10000 Ambrose Lake, t, c, Liskeard	1 18 6	—	—	
20000 Betallock, t, c, St. Just*	116 5 0	—	20	—	40 50	0 19 15	0 8 0	Aug. 1872	10000 Ambrose Lake, t, c, Liskeard	1 18 6	—	—
100000 Bronfydd, t, c, Cardigan	1 7 6	—	—	—	2 2 0	0 0 0	Jan. 1872	12000 Bedfordshire, t, c, Schull	2 0 0	—	—	
4000 Brookwood, c, Buckfastleigh	1 16 0	—	—	—	3 12 6	0 9 0	Nov. 1875	12000 Bedfordshire, t, c, Schull	1 17 6	1 1 4	1 1 4	
3345 Cargoll, t, c, Newlyn*	5 13 0	—	34	34	4 16 8	0 13 6	Oct. 1874	12000 Bedfordshire, t, c, Schull	2 6 6	—	—	
6400 Cashwell, t, c, Cumberland	2 10 0	—	—	—	1 9 6	0 2 0	Aug. 1875	12000 Bedfordshire, t, c, Schull	3 0 0	36	36	
10000 Carn Brea, c, t, Illogan	35 0 0	39	37 39	—	308 0	0 1 0	Feb. 1874	12000 Bedfordshire, t, c, Schull	1 0 0	34	34	
8000 Cath, & Jane, t, Porthyndendrath	5 0 0	—	—	—	0 7 6	0 7 6	Jan. 1875	12000 Bedfordshire, t, c, Schull	1 0 0	—	—	
2450 Cook's Kitchen, t, Illogan*	21 9 9	—	6	—	5 5 4	0 11 17	0 7 6	Jan. 1873	12000 Bedfordshire, t, c, Schull	1 0 0	—	—
10240 Devon Gl. Consols, t, Tavistock*	1 0 0	—	43	43	11 6 10	0 12 0	May 1872	12000 Bedfordshire, t, c, Schull	1 0 0	—	—	
4958 Dolcoath, c, t, Camborne	10 14 10	42	40 42	—	107 15 8	0 10 0	Nov. 1875	12000 Bedfordshire, t, c, Schull	1 0 0	—	—	
6500 Drake Walls, t, c, Calstock	—	—	—	—	0 3 0	0 2 0	Oct. 1874	12000 Bedfordshire, t, c, Schull	1 0 0	—	—	
100000 Early Ballewden, t, Sancroft*	1 0 0	—	—	—	0 2 11	0 0 5	Feb. 1874	12000 Bedfordshire, t, c, Schull	1 0 0	—	—	
6144 East Cardron, c, St. Cleer	2 14 6	—	13	2	14 19	0 1 0	Oct. 1872	12000 Bedfordshire, t, c, Schull	1 0 0	—	—	
300 East Darren, t, c, Cardiganshire	32 0 0	30	28 30	—	291 10 0	1 0 0	Nov. 1875	12000 Bedfordshire, t, c, Schull	1 0 0	—	—	
6400 East Pool, t, c, Illogan	0 9 9	—	13	14	0 4 6	0 4 6	Nov. 1875	12000 Bedfordshire, t, c, Schull	1 0 0	—	—	
1900 East Wheal Lovell, t, Wenvron*	5 19 0	6	3 4	—	30 7 6	0 1 0	Oct. 1874	12000 Bedfordshire, t, c, Schull	1 0 0	—	—	
2800 Foxdale, t, Isle of Man*	25 0 0	—	—	—	81 15 0	0 10 0	Sept. 1875	12000 Bedfordshire, t, c, Schull	1 0 0	—	—	
40000 Glasgow Cara, c* [30,000 £1 p. 10,000 £1 p.]	—	—	—	—	0 8 4	0 1 0	Sept. 1875	12000 Bedfordshire, t, c, Schull	1 0 0	—	—	
15000 Great Laxey, t, Isle of Man*	1 0 0	—	13	13	0 10 0	0 10 0	Oct. 1875	12000 Bedfordshire, t, c, Schull	1 0 0	—	—	
35000 Great West Van, t, Cardigan*	2 0 0	—	3	3	0 2 0	0 1 0	Aug. 1874	12000 Bedfordshire, t, c, Schull	1 0 0	—	—	
5908 Great Wheal Vor, t, t, Helston*	41 2 6	34	29 3	—	15 19 6	0 2 6	June 1872	12000 Bedfordshire, t, c, Schull	1 0 0	—	—	
6400 Green Hurst, t, Durham*	0 8 0	—	4	—	1 12 0	0 4 0	Oct. 1874	12000 Bedfordshire, t, c, Schull	1 0 0	—	—	
20000 Grogwinion, t, Cardigan*	2 0 0	—	34	34	0 3 0	0 1 0	Aug. 1875	12000 Bedfordshire, t, c, Schull	1 0 0	—	—	
9530 Gunnislake (Clitters), t, c	5 5 0	—	3 3	3	0 8 9	0 1 6	Oct. 1875	12000 Bedfordshire, t, c, Schull	1 0 0	—	—	
1024 Berdofstow, t, near Liskeard*	8 10 0	34	8 3 2	—	62 5	0 18 0	Oct. 1872	12000 Bedfordshire, t, c, Schull	1 0 0	—	—	
18000 Bington Down, c, Calstock* (£1 sh.)	2 5 0	—	3 4	3	4 0 0	0 1 0	Nov. 1872	12000 Bedfordshire, t, c, Schull	1 0 0	—	—	
25000 Killaloe, t, Tipperary	1 0 0	—	—	—	0 3 11 5	0 6 0	Mar. 1878	12000 Bedfordshire, t, c, Schull	26 0	—	—	
40000 Lisburne, t, Cardiganshire	15 15 0	55	50 55	—	570 10 0	1 0 0	Nov. 1875	12000 Bedfordshire, t, c, Schull	6 10 0	13 6	13 6	
8120 Lovell, t, Wenvron	0 10 0	—	—	—	0 17 6	0 1 6	Jan. 1874	12000 Bedfordshire, t, c, Schull	7 8 6	—	—	
11000 Melindur Valley, t, Cardigan*	3 0 0	8	2 8	—	0 7 2	0 3 7	Jan. 1875	12000 Bedfordshire, t, c, Schull	5 0 0	—	—	
30000 Minea Mining Co., t, Wrexham*	5 0 0	6	5 6	—	64 4 2	0 3 0	Nov. 1875	12000 Bedfordshire, t, c, Schull	5 0 0	—	—	
30000 Mining Co. of Ireland, c, c, t*	7 0 0	—	—	—	0 8 0	0 3 6	July 1872	12000 Bedfordshire, t, c, Schull	1 0 0	—	—	
512 North Bury, c, Chacewater	3 9 6	—	9 9	0 9 9	0 10 0	0 10 0	Dec. 1875	12000 Bedfordshire, t, c, Schull	4 16 0	5 6	5 6	
12000 North Bude, t, Wales	2 10 0	—	—	—	1 2 6	0 2 6	Nov. 1875	12000 Bedfordshire, t, c, Schull	2 0 0	—	—	
2000 North Levant, t, c, St. Just*	19 2 0	—	—	—	4 13 0	0 12 0	Sept. 1873	12000 Bedfordshire, t, c, Schull	6 10 0	13 6	13 6	
27585 Old Trebrett, t, c, ordinary shares	1 0 0	—	—	—	0 0 9	0 0 9	Feb. 1874	12000 Bedfordshire, t, c, Schull	1 0 0	—	—	
9268 Old Trebrett, t, c, (10 per cent. pref.)	0 10 0	—	—	—	0 17 6	0 1 6	Jan. 1875	12000 Bedfordshire, t, c, Schull	1 0 0	—	—	
5520 Pedu-n-a-dra, t, Redruth	9 17 0	—	—	—	0 5 0	0 5 0	Nov. 1871	12000 Bedfordshire, t, c, Schull	1 0 0	—	—	
30000 Penrhyn, t, c, Gwernap-	2 0 0	—	—	—	0 2 8	0 2 8	Nov. 1875	12000 Bedfordshire, t, c, Schull	1 0 0	—	—	
1772 Penrhyn, t, c, Llanrhystud	4 13 4	—	—	—	39 19 10	0 4 0	Nov. 1872	12000 Bedfordshire, t, c, Schull	1 0 0	—	—	
2000 North Levant, t, c, St. Just*	19 2 0	—	—	—	0 7 0	0 1 0	Oct. 1875	12000 Bedfordshire, t, c, Schull	1 0 0	—	—	
27585 Old Trebrett, t, c, ordinary shares	1 0 0	—	—	—	0 13 0	0 12 0	Sept. 1873	12000 Bedfordshire, t, c, Schull	1 0 0	—	—	
9268 Old Trebrett, t, c, (10 per cent. pref.)	0 10 0	—	—	—	0 0 9	0 0 9	Feb. 1874	12000 Bedfordshire, t, c, Schull	1 0 0	—	—	
5520 Pedu-n-a-dra, t, Redruth	9 17 0	—	—	—	0 17 6	0 1 6	Jan. 1875	12000 Bedfordshire, t, c, Schull	1 0 0	—	—	
30000 Penrhyn, t, c, Gwernap-	2 0 0	—	—	—	0 5 0	0 5 0	Nov. 1871	12000 Bedfordshire, t, c, Schull	1 0 0	—	—	
1772 Penrhyn, t, c, Llanrhystud	4 13 4	—	—	—	39 19 10	0 4 0	Nov. 1872	12000 Bedfordshire, t, c, Schull	1 0 0	—	—	
2000 North Levant, t, c, St. Just*	19 2 0	—	—	—	0 7 0	0 1 0	Oct. 1875	12000 Bedfordshire, t, c, Schull	1 0 0	—	—	
27585 Old Trebrett, t, c, ordinary shares	1 0 0	—	—	—	0 13 0	0 12 0	Sept. 1873	12000 Bedfordshire, t, c, Schull	1 0 0	—	—	
9268 Old Trebrett, t, c, (10 per cent. pref.)	0 10 0	—	—	—	0 0 9	0 0 9	Feb. 1874	12000 Bedfordshire, t, c, Schull	1 0 0	—	—	
5520 Pedu-n-a-dra, t, Redruth	9 17 0	—	—	—	0 17 6	0 1 6	Jan. 1875	12000 Bedfordshire, t, c, Schull	1 0 0	—	—	
30000 Penrhyn, t, c, Gwernap-	2 0 0	—	—	—	0 5 0	0 5 0	Nov. 1871	12000 Bedfordshire, t, c, Schull	1 0 0	—	—	
1772 Penrhyn, t, c, Llanrhystud	4 13 4	—	—	—	39 19 10	0 4 0	Nov. 1872	12000 Bedfordshire, t, c, Schull	1 0 0	—	—	
2000 North Levant, t, c, St. Just*	19 2 0	—	—	—	0 7 0	0 1 0	Oct. 1875	12000 Bedfordshire, t, c, Schull	1 0 0	—	—	
27585 Old Trebrett, t, c, ordinary shares	1 0 0	—	—	—	0 13 0	0 12 0	Sept. 1873	12000 Bedfordshire, t, c, Schull	1 0 0	—	—	
9268 Old Trebrett, t, c, (10 per cent. pref.)	0 10 0	—	—	—	0 0 9	0 0 9	Feb. 1874	12000 Bedfordshire, t, c, Schull	1 0 0	—	—	
5520 Pedu-n-a-dra, t, Redruth	9 17 0	—	—	—	0 17 6	0 1 6	Jan. 1875	12000 Bedfordshire, t, c, Schull	1 0 0	—		